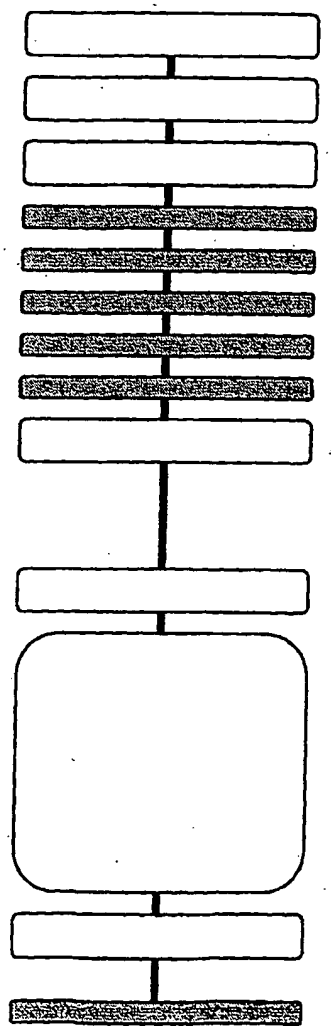
Fig. 1

Different domains of RKS proteins



Signal Sequence

Leucine Zipper Domain

Cystein Motif

4-5 LRRs

Cystein Motif /
Serine and Proline rich

Transmembrane Domain

Unknown domain

Serine-Threonine
Kinase Domain

Unknown domain

1 LRR

Fig. 2

Developmental tree of the different Receptor Kinases like SERK (RKS) genes.

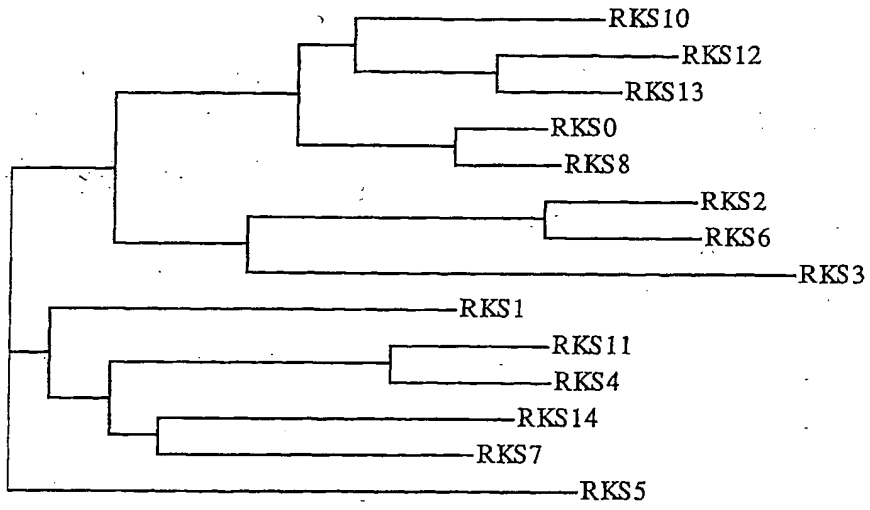


Fig. 3

Intron-Exon structure of the RKS genes in *Arabidopsis thaliana* var. Columbia.
SS signal sequence; LRR leucine rich repeat domain; TM transmembrane domain.

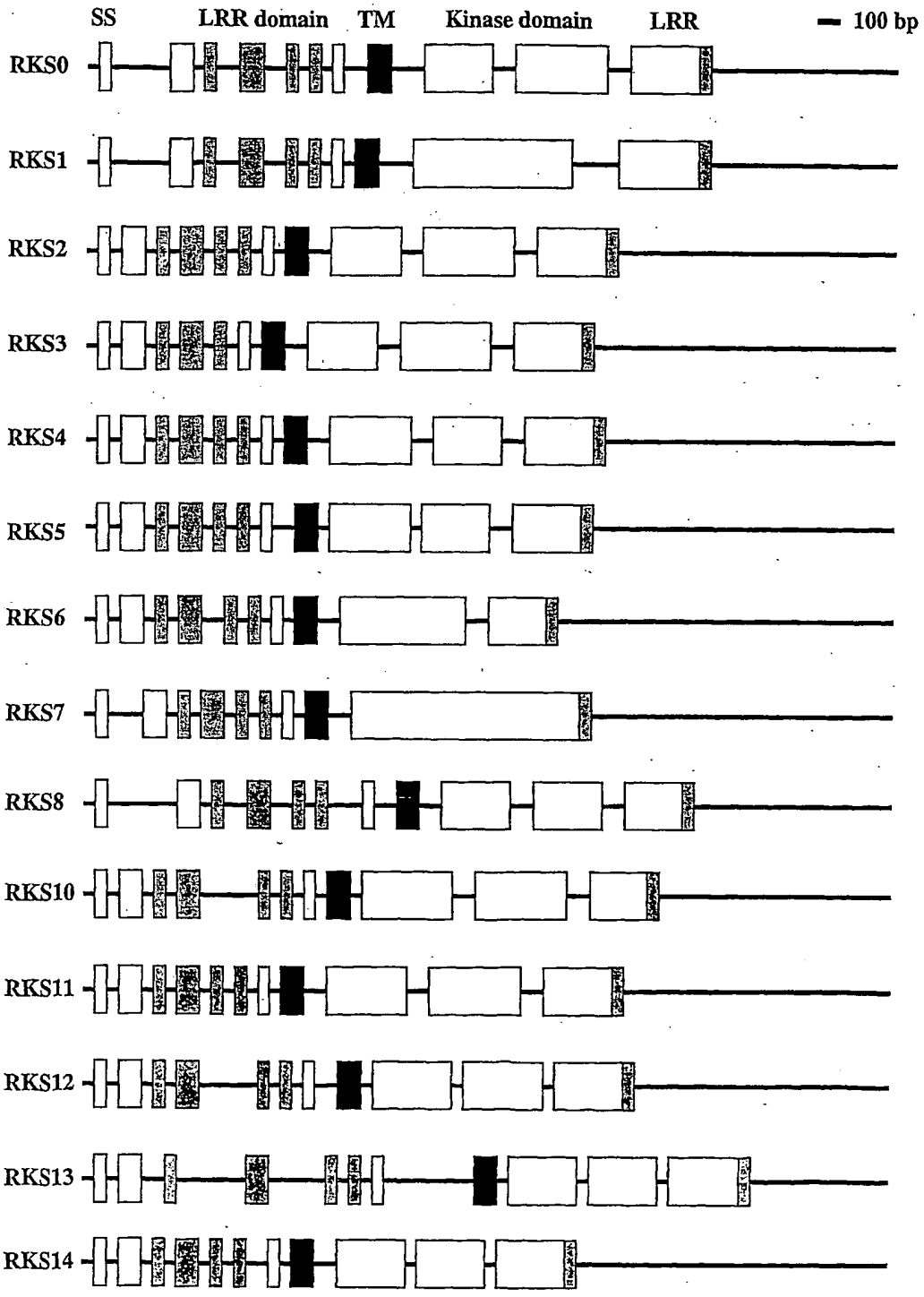


Fig. 4

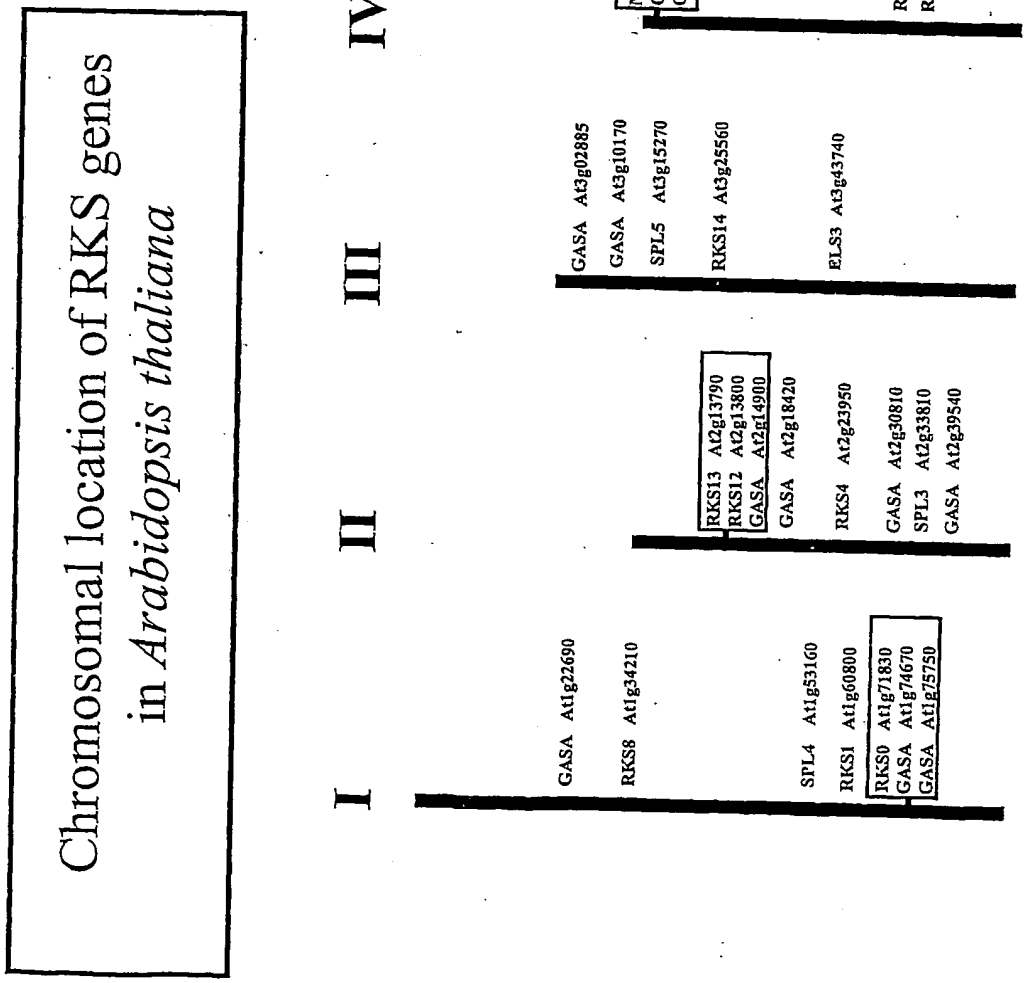
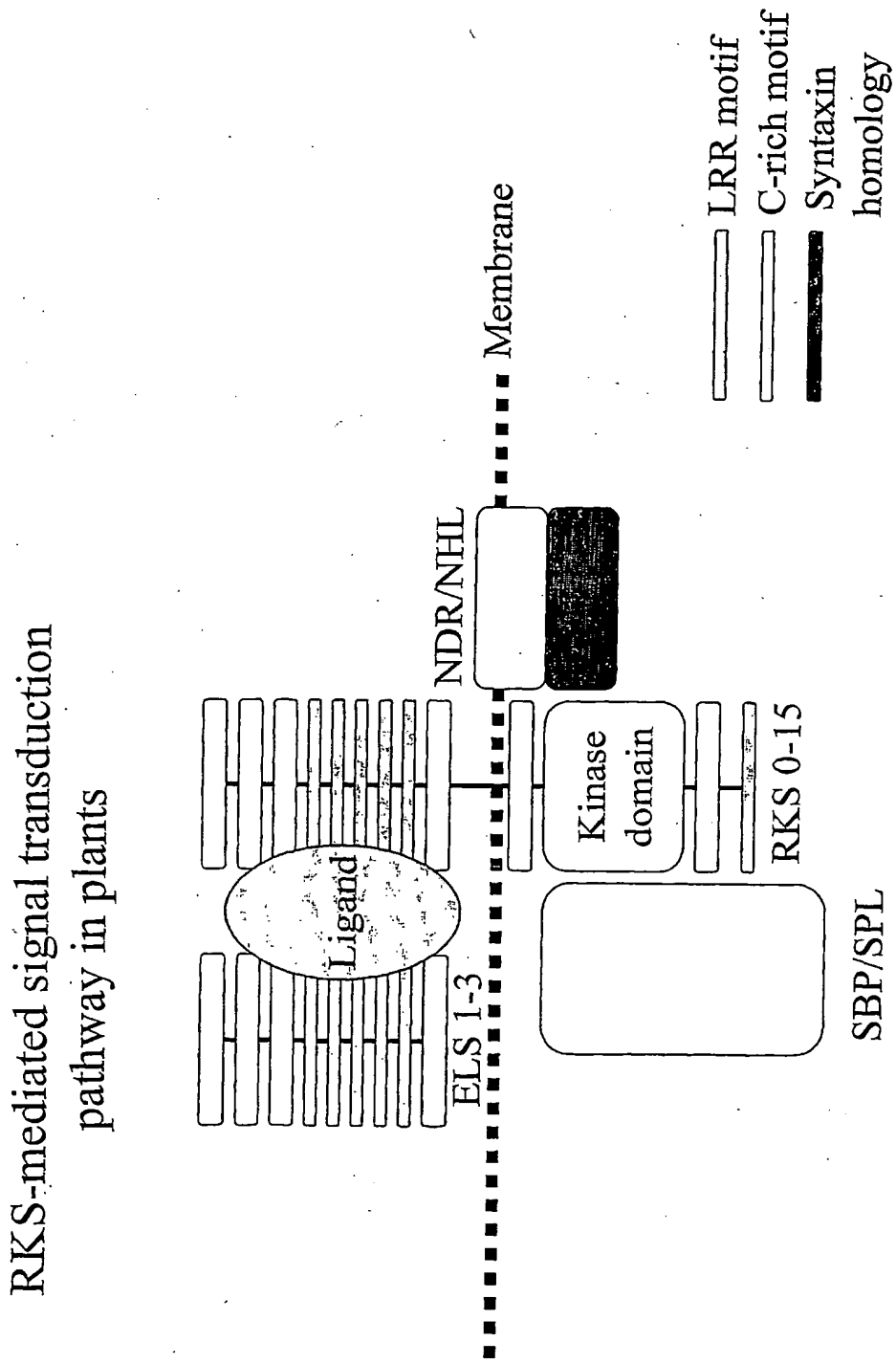

Chromosomal location of RKS genes in Arabidopsis thaliana
I
II
III
IV
V
GASA At1g22690
RKS8 At1g34210
SPL4 At1g53160
RKS1 At1g60800
RKS0 At1g71830
GASA At1g74670
GASA At1g75750
RKS13 At2g13790
RKS12 At2g13800
GASA At2g14900
GASA At2g18420
RKS4 At2g23950
GASA At2g30810
SPL3 At2g33810
GASA At2g39540
GASA At3g02885
GASA At3g10170
SPL5 At3g15270
RKS14 At3g25560
ELS3 At3g43740
NHL22 At4g09590
GASA3 At4g09600
GASA2 At4g09610
RKS11 At4g30520
RKS10 At4g33430
RKS6 At5g10290
GASA At5g14920
GASA4 At5g15230
RKS7 At5g16000
ELS1 At5g21090
RKS5 At5g45780
RKS3 At5g63710
RKS2 At5g65240

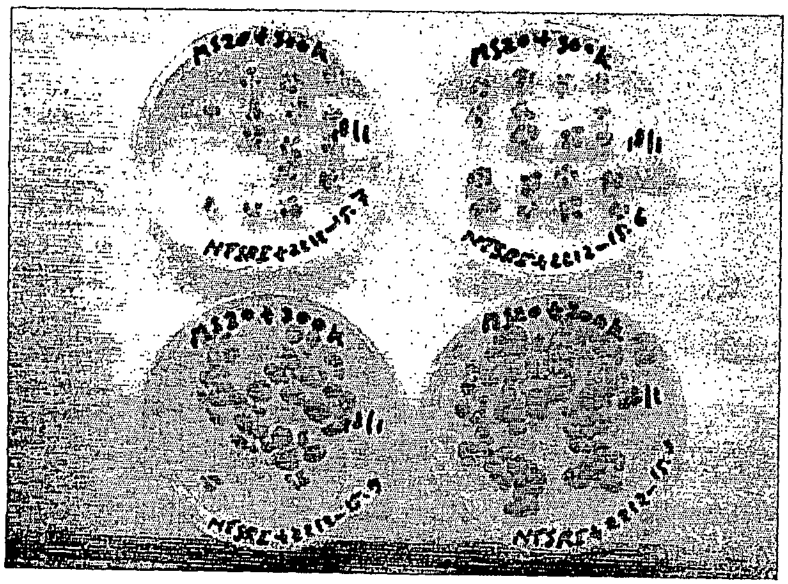
Fig. 5


RKS-mediated signal transduction pathway in plants
LRR motif
C-rich motif
Syntaxin homology
Membrane
NDR/NHL
Kinase domain
RKS 0-15
Ligand
ELS 1-3
SBP/SPL

Express Mail Label: EL 769582137 US
Applicant: Eduard Daniel Leendert Schmidt
Title: Modulating Developmental Pathways in Plants
Our Docket: 294-208 PCT/US

10/521518

GT-RKS4 determines seeling size in *Nicotiana tabacum.*



Modifications in the expression proficle of GT-RKS4 modulates organ size within seedlings of *Nicotiana tabacum.*

Fig. 7

GT-RKS4 determines organ size in *Nicotiana tabacum*.

GT-RKS4-7S-T2

GT-RKS4-6S-T2

GT-RKS4-3S-T2

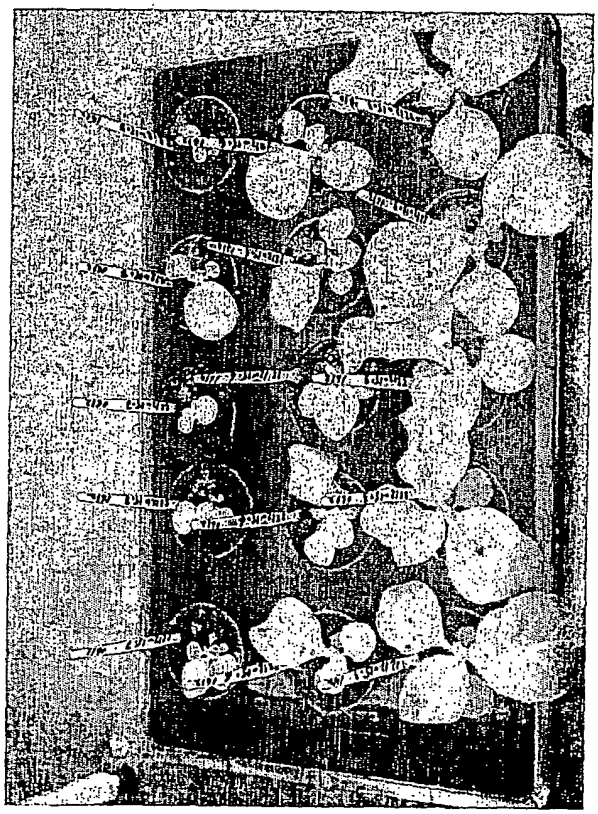


Fig. 8

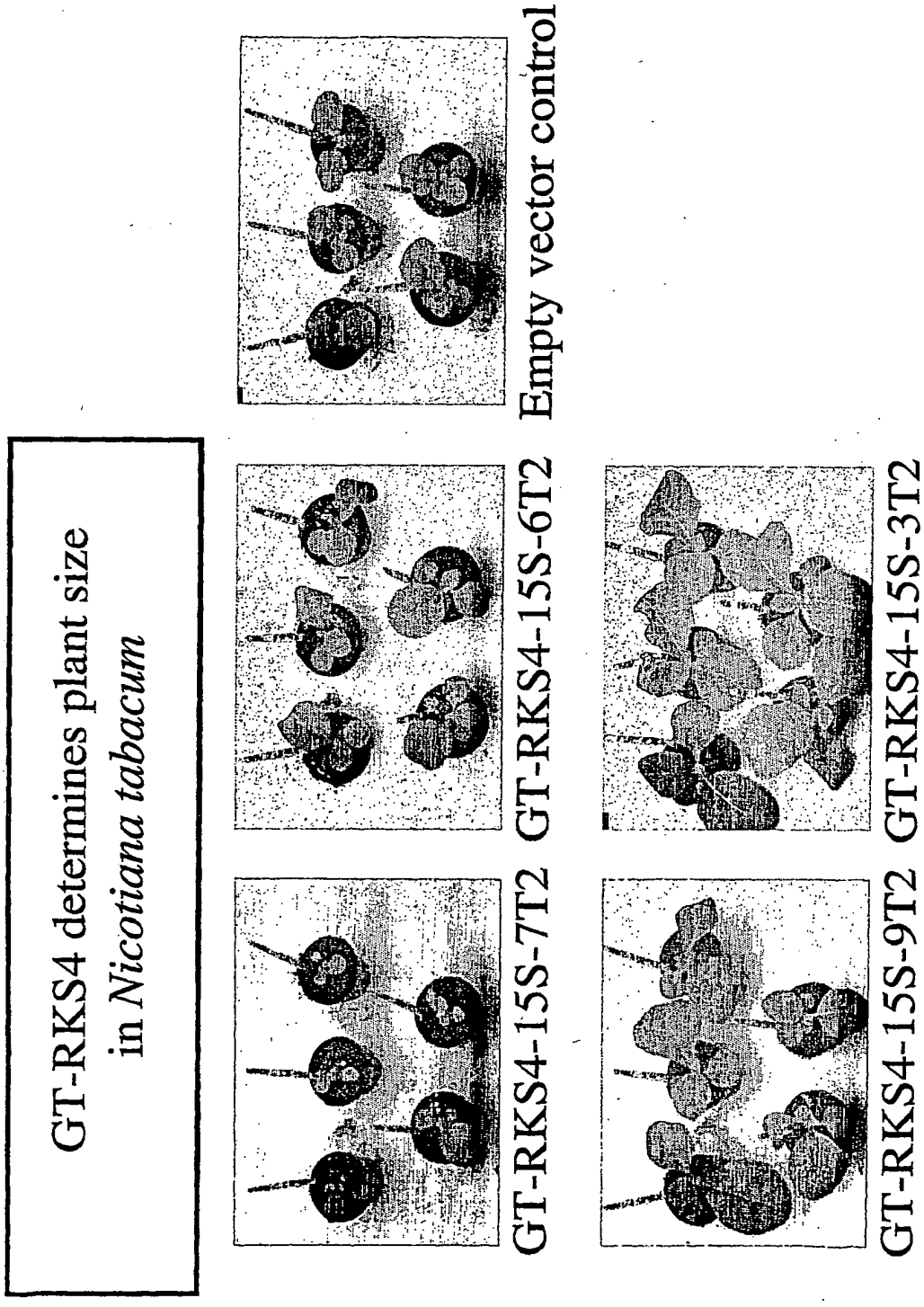
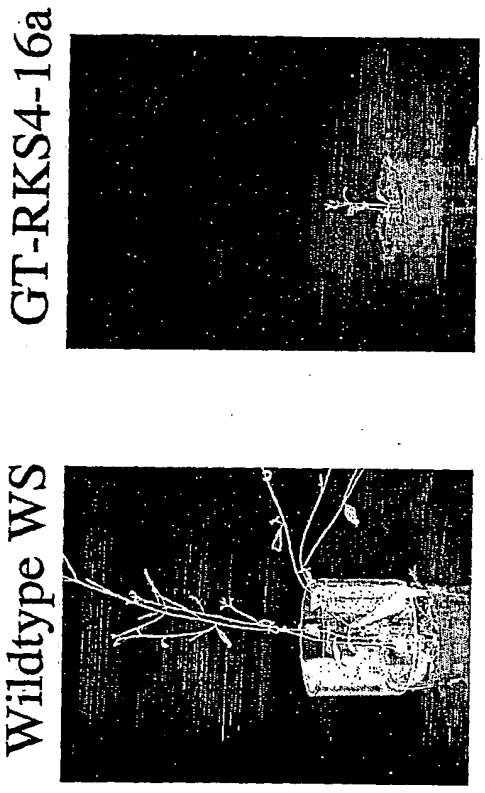

GT-RKS4 determines plant size in Nicotiana tabacum
Empty vector control
GT-RKS4-15S-6T2
GT-RKS4-15S-3T2
GT-RKS4-15S-7T2
GT-RKS4-15S-9T2

Fig. 9

Stable transformed GT-RKS4-antisense in *Arabidopsis thaliana*



Overexpression of antisense GT-RKS4-1a reduces plant and organ size.

Fig. 10

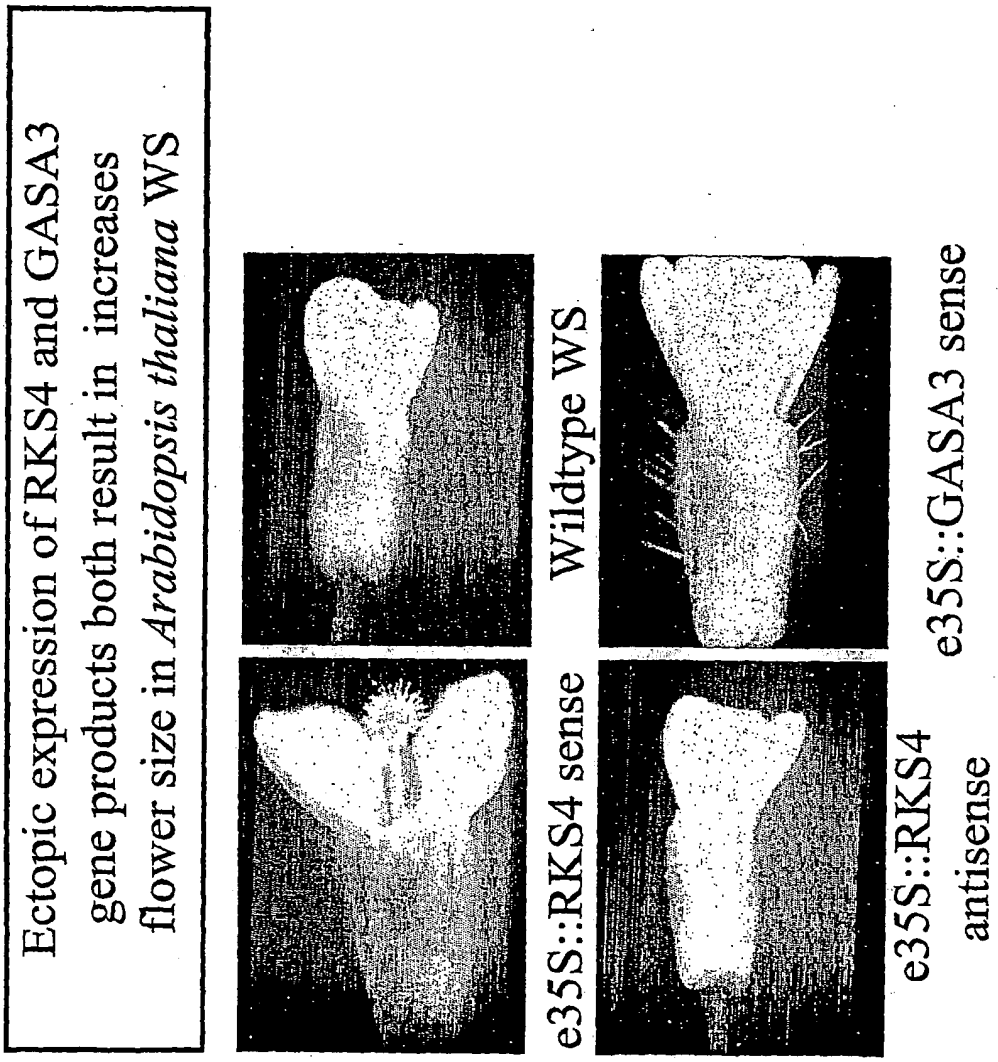

Ectopic expression of RKS4 and GASA3 gene products both result in increases flower size in *Arabidopsis thaliana* WS
Wildtype WS
e35S::GASA3 sense
e35S::RKS4 sense
e35S::RKS4 antisense

Fig. 11

Ectopic expression of RKS4 in seedlings results in the formation of meristematic regions in the hypocotyl of *Arabidopsis thaliana* WS

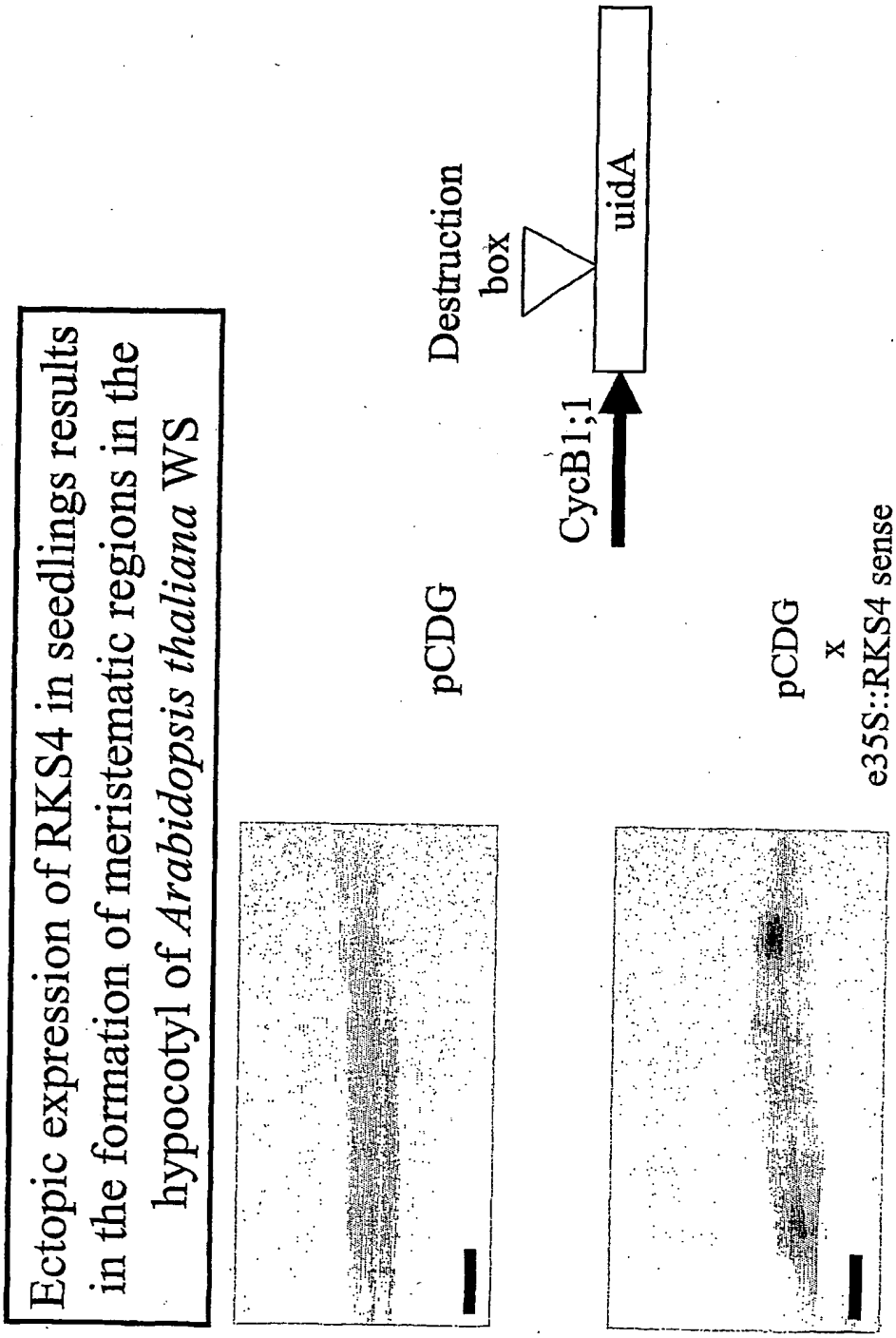


Fig. 12

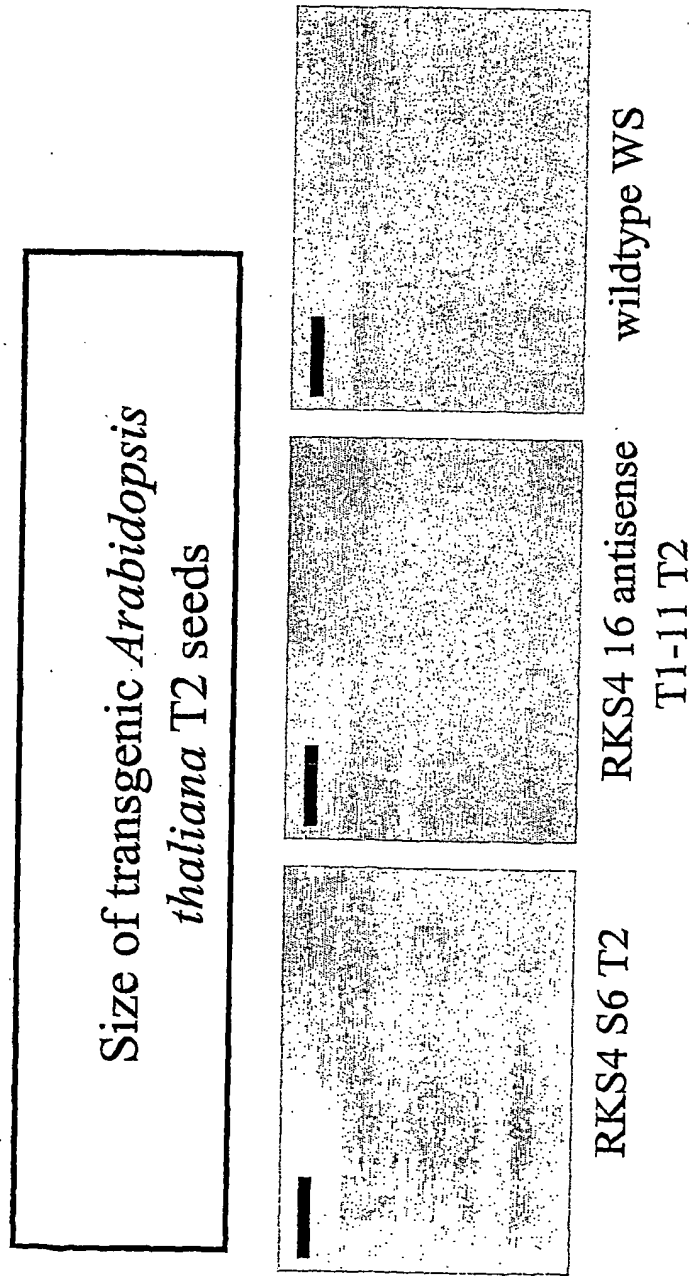

Size of transgenic *Arabidopsis thaliana* T2 seeds
wildtype WS
RKS4 16 antisense T1-11 T2
RKS4 S6 T2

Fig. 13

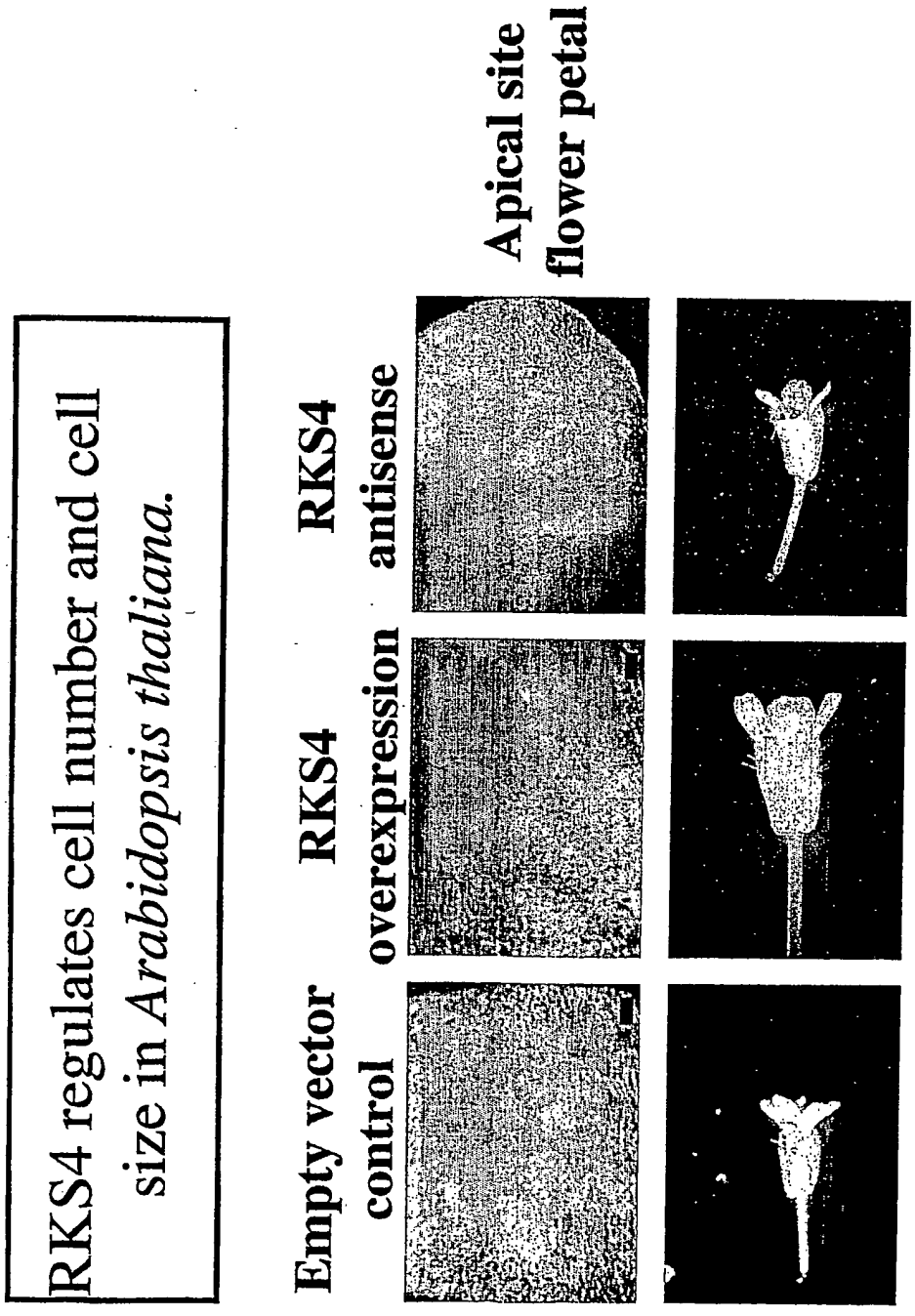

RKS4 regulates cell number and cell size in *Arabidopsis thaliana*.
Empty vector control
RKS4 overexpression
RKS4 antisense
Apical site flower petal

Fig. 14

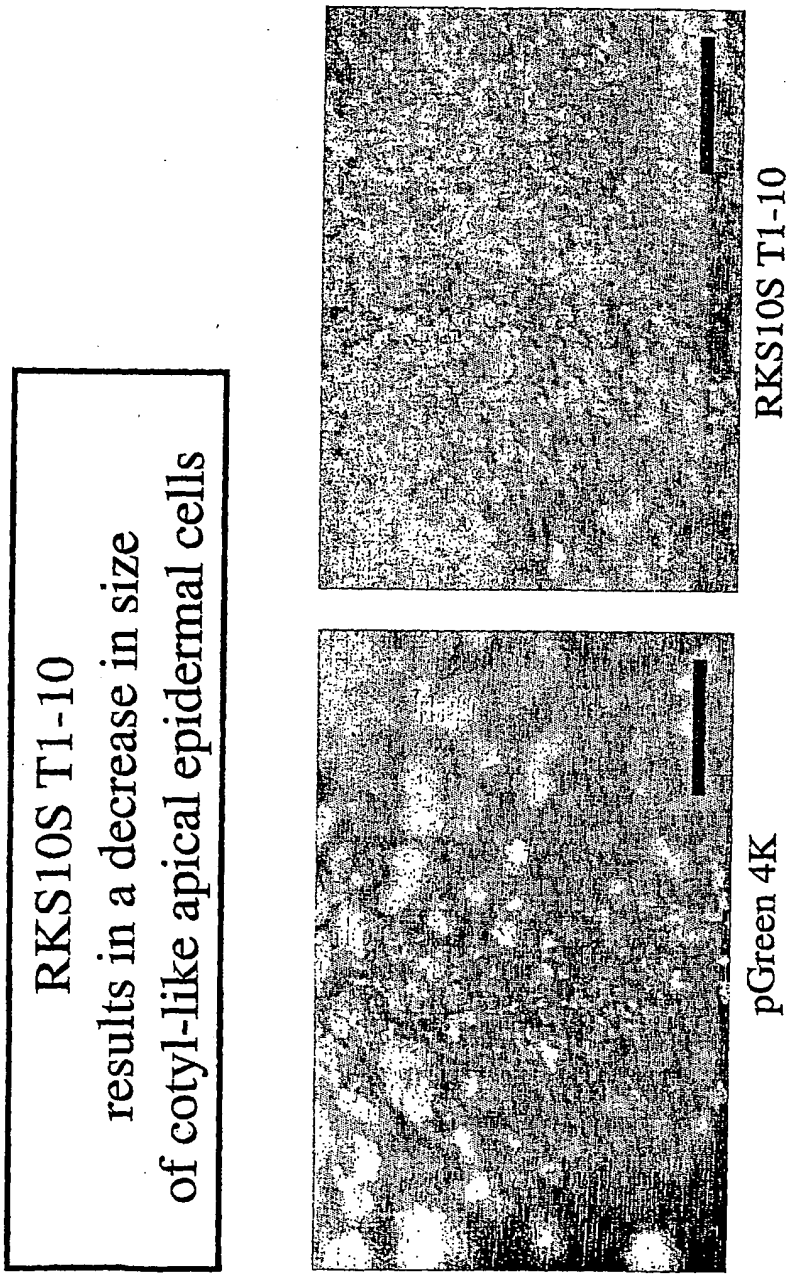

RKS10S T1-10
results in a decrease in size
of cotyl-like apical epidermal cells
RKS10S T1-10
pGreen 4K

Fig. 15

RKS10antisense T1-4
results in an increase in size
of the cotyl epidermal cells

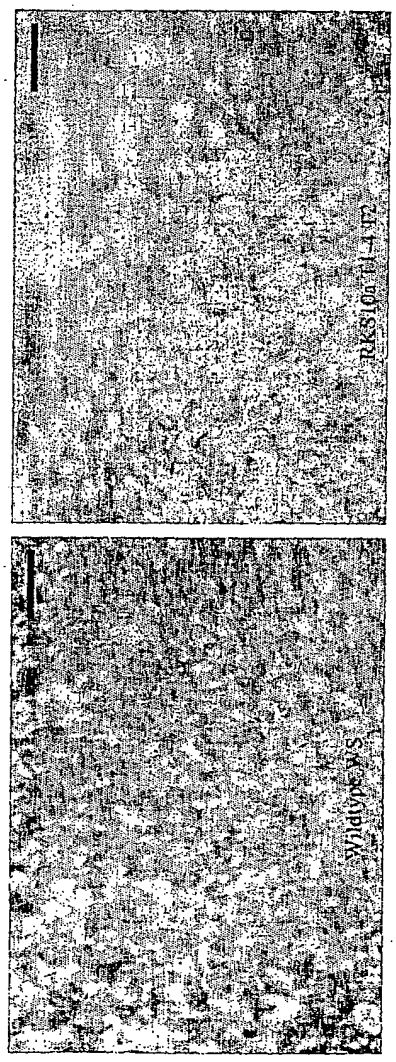
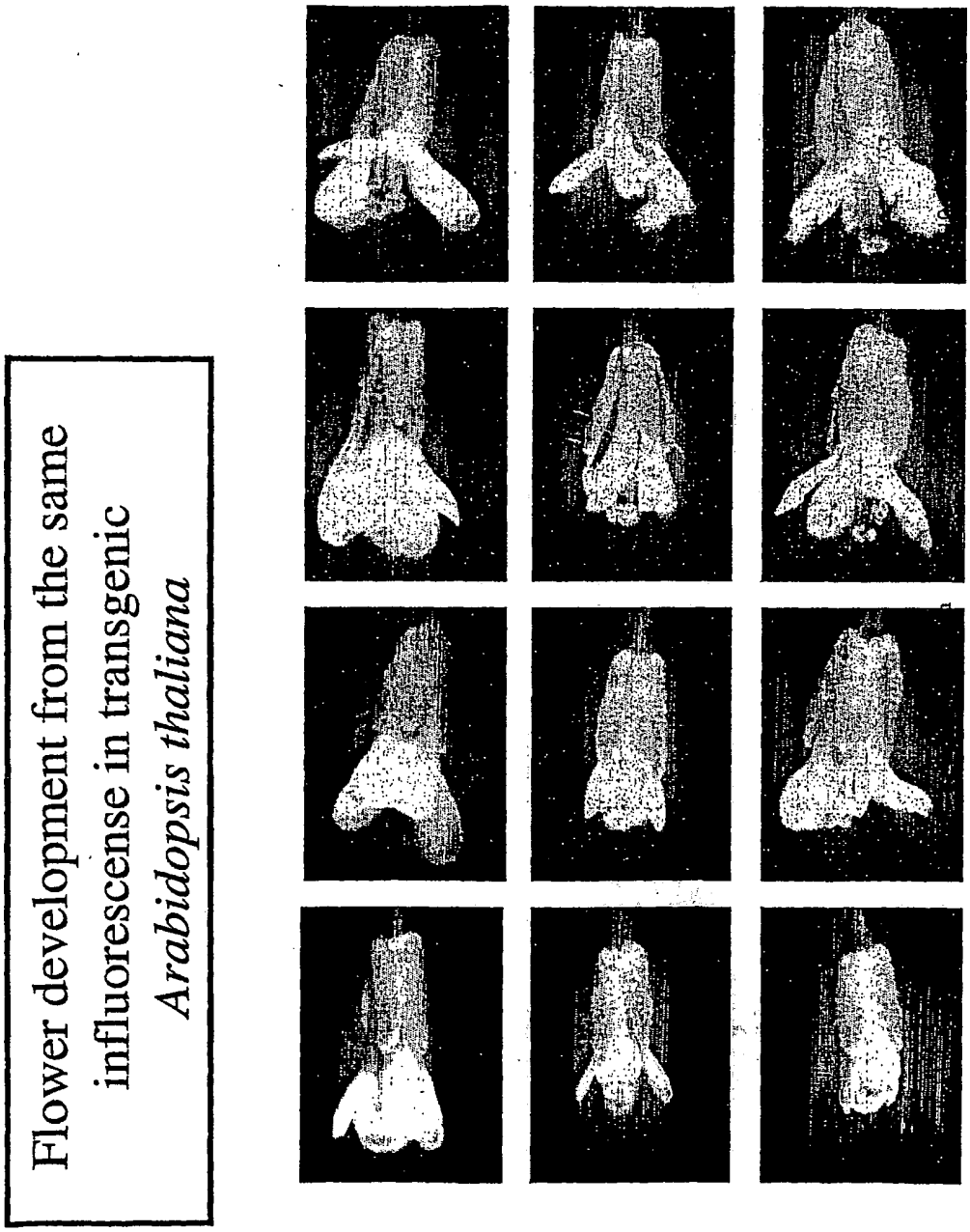


Fig. 16



Flower development from the same influorescense in transgenic *Arabidopsis thaliana*

Fig. 17

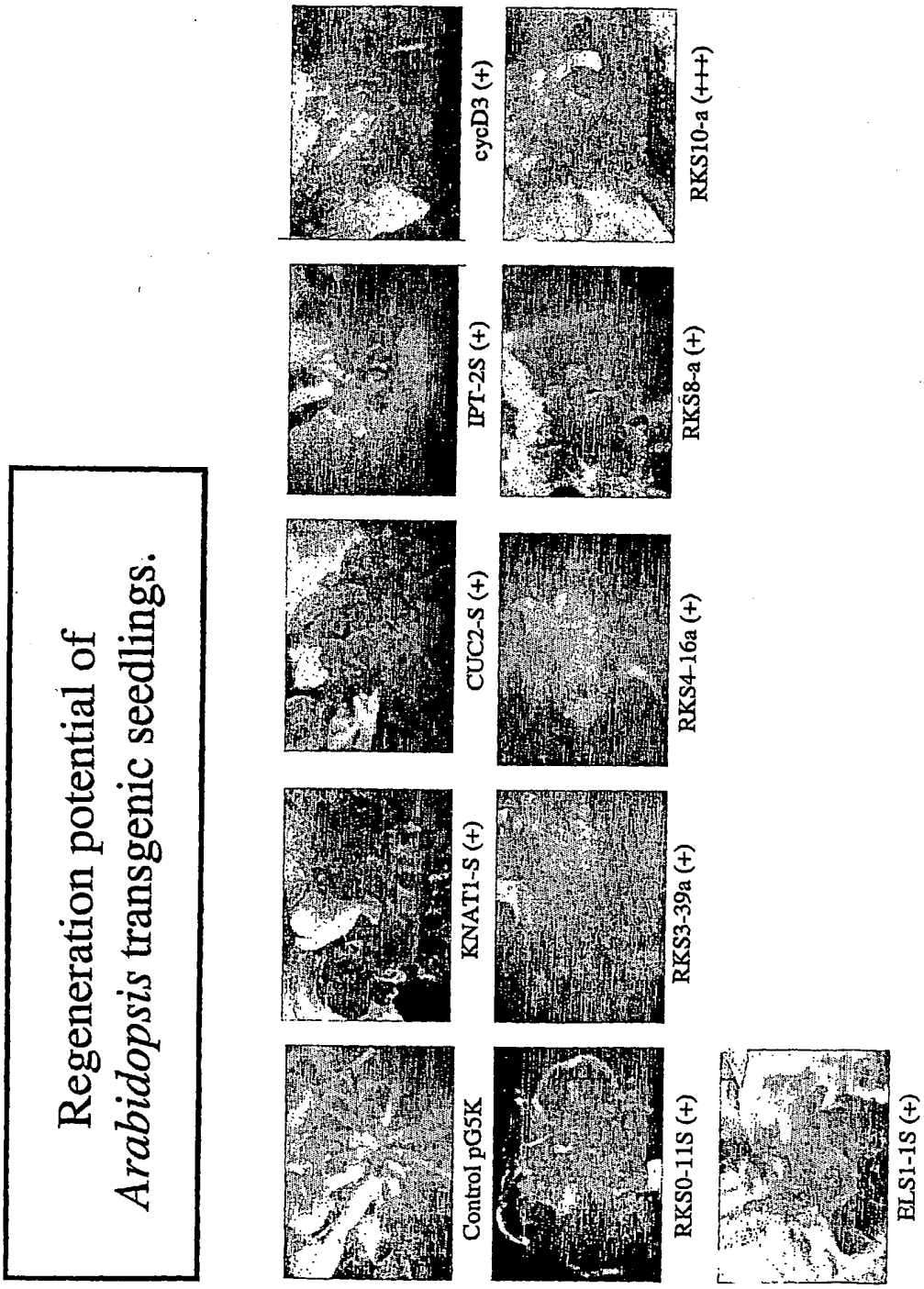

Regeneration potential of
Arabidopsis transgenic seedlings.
cycD3 (+)
RKS10-a (+++)
IPT-2S (+)
RKS8-a (+)
CUC2-S (+)
RKS4-16a (+)
KNAT1-S (+)
RKS3-39a (+)
Control pG5K
RKS0-11S (+)
ELS1-1S (+)

Fig. 18

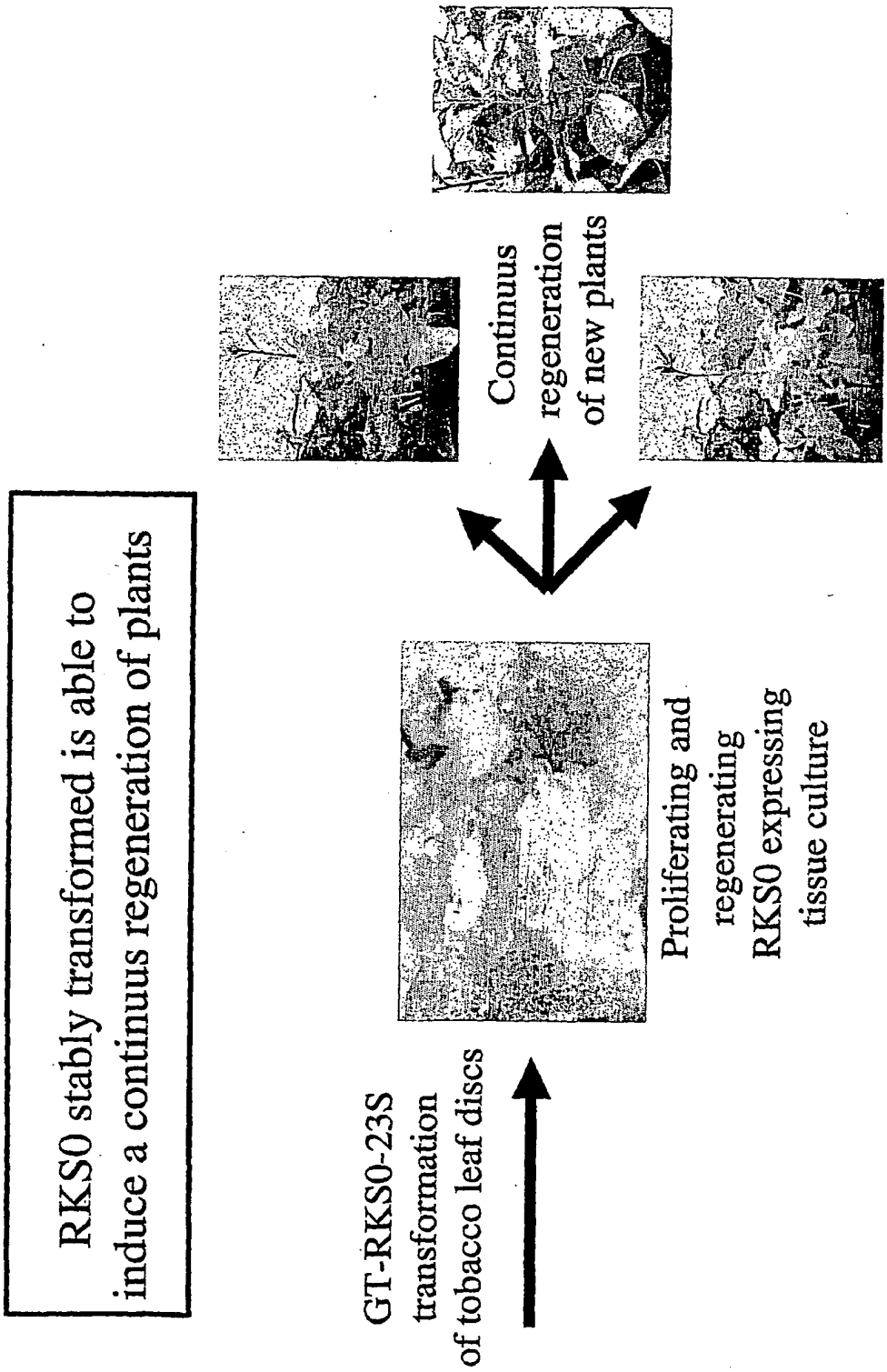

RKS0 stably transformed is able to induce a continuus regeneration of plants
GT-RKS0-23S transformation of tobacco leaf discs
Proliferating and regenerating RKS0 expressing tissue culture
Continuus regeneration of new plants

Fig. 19

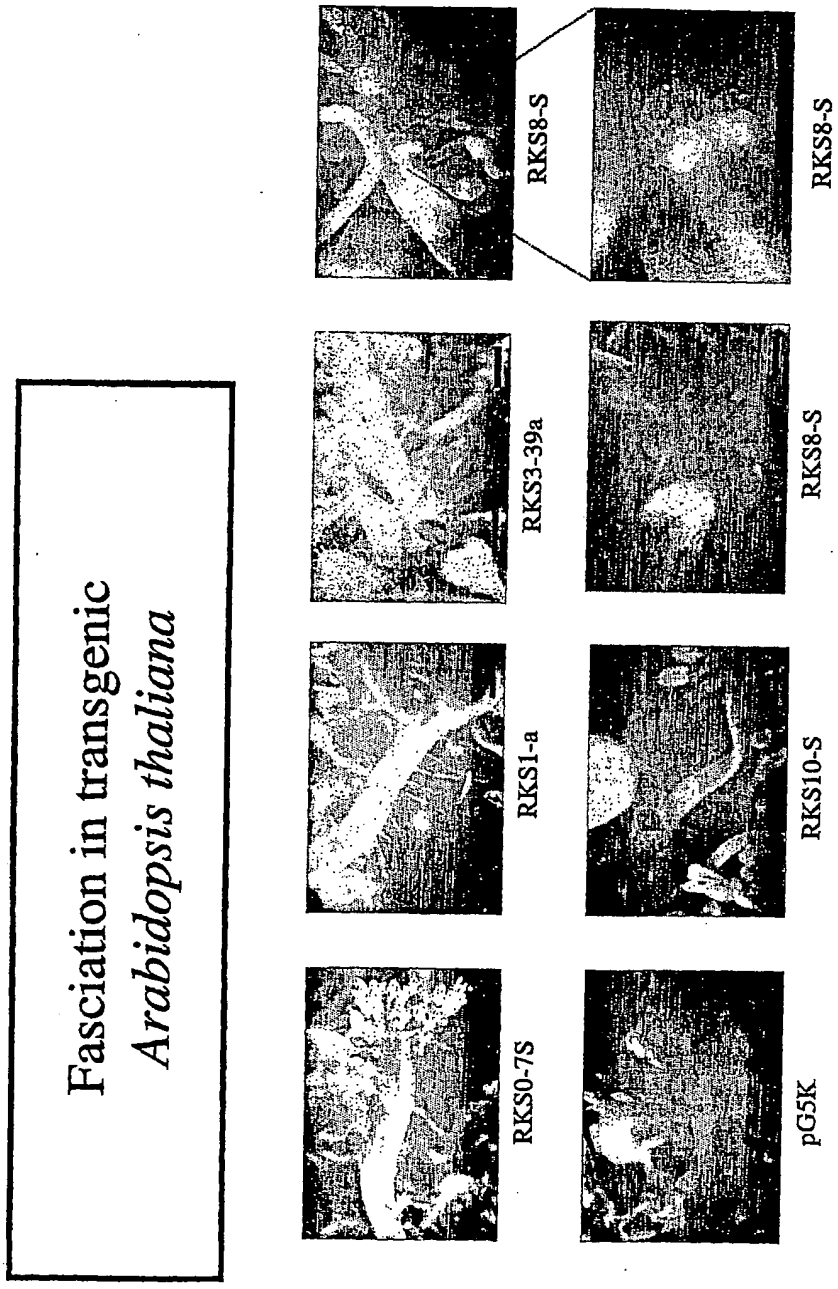

Fasciation in transgenic
Arabidopsis thaliana
RKS8-S
RKS8-S
RKS3-39a
RKS8-S
RKS1-a
RKS10-S
RKS0-7S
pG5K

Fig. 20

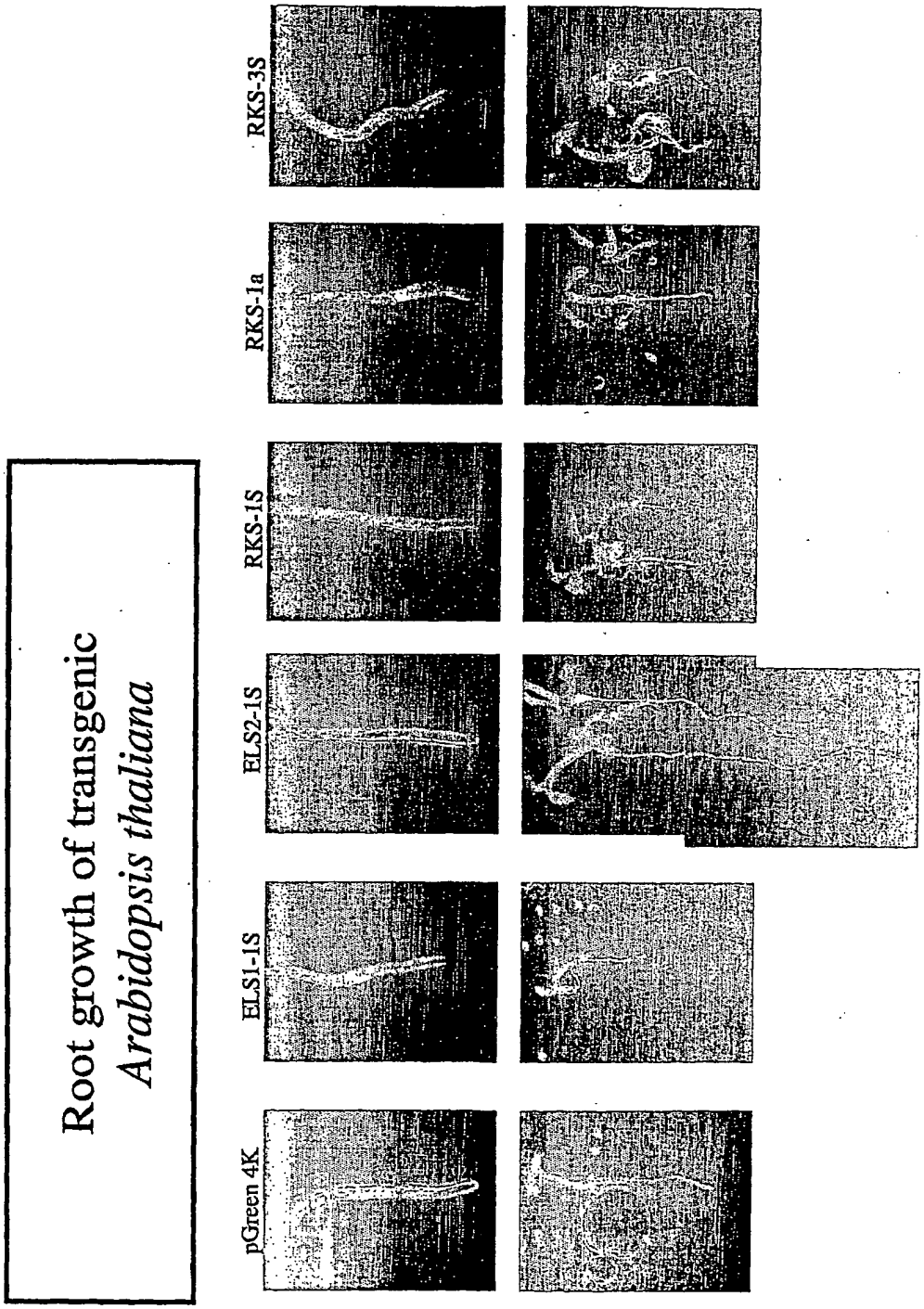

Root growth of transgenic
Arabidopsis thaliana
RKS-3S
RKS-1a
RKS-1S
ELS2-1S
ELS1-1S
pGreen 4K

Fig. 21

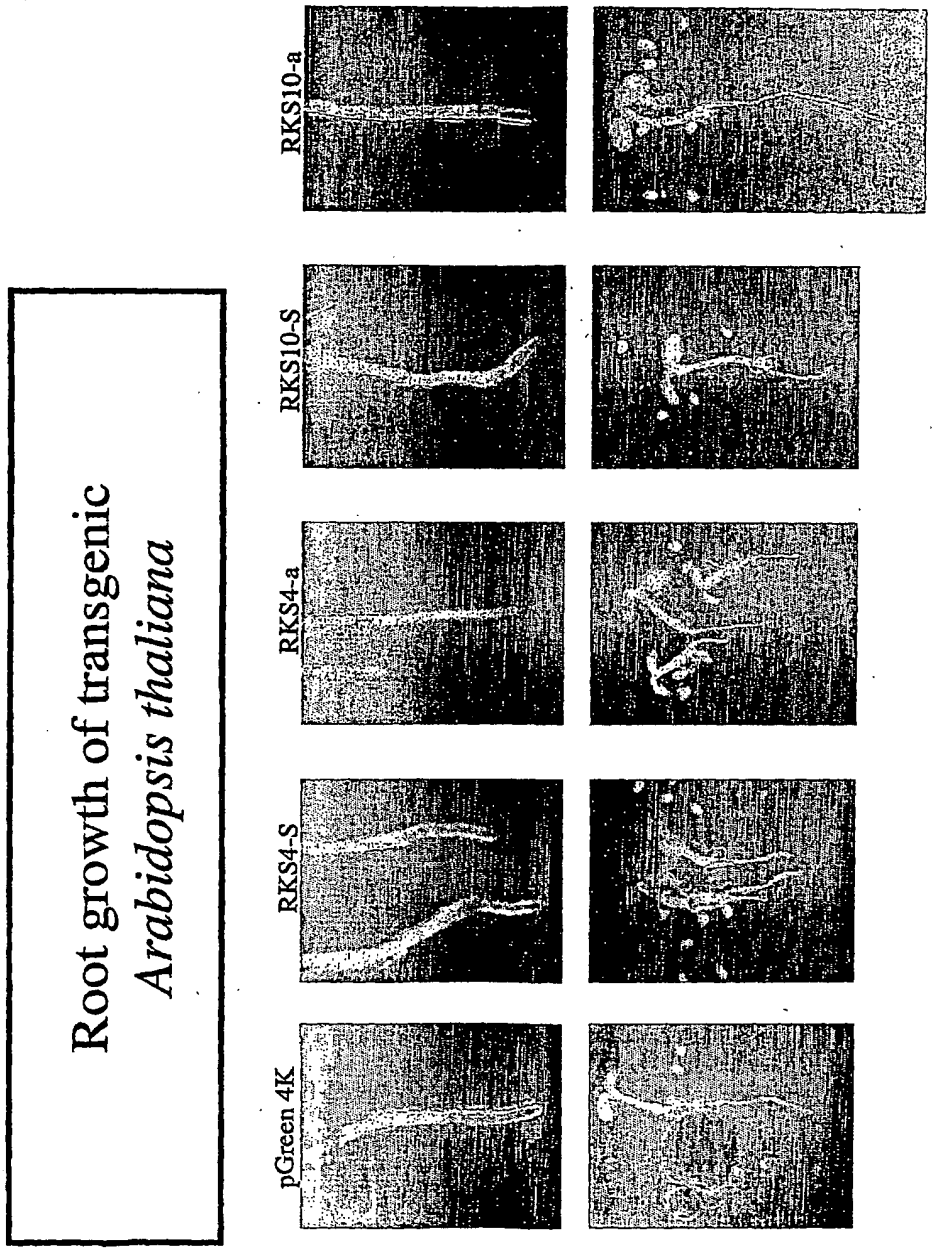

Root growth of transgenic
Arabidopsis thaliana
RKS10-a
RKS10-S
RKS4-a
RKS4-S
pGreen 4K

Fig. 22

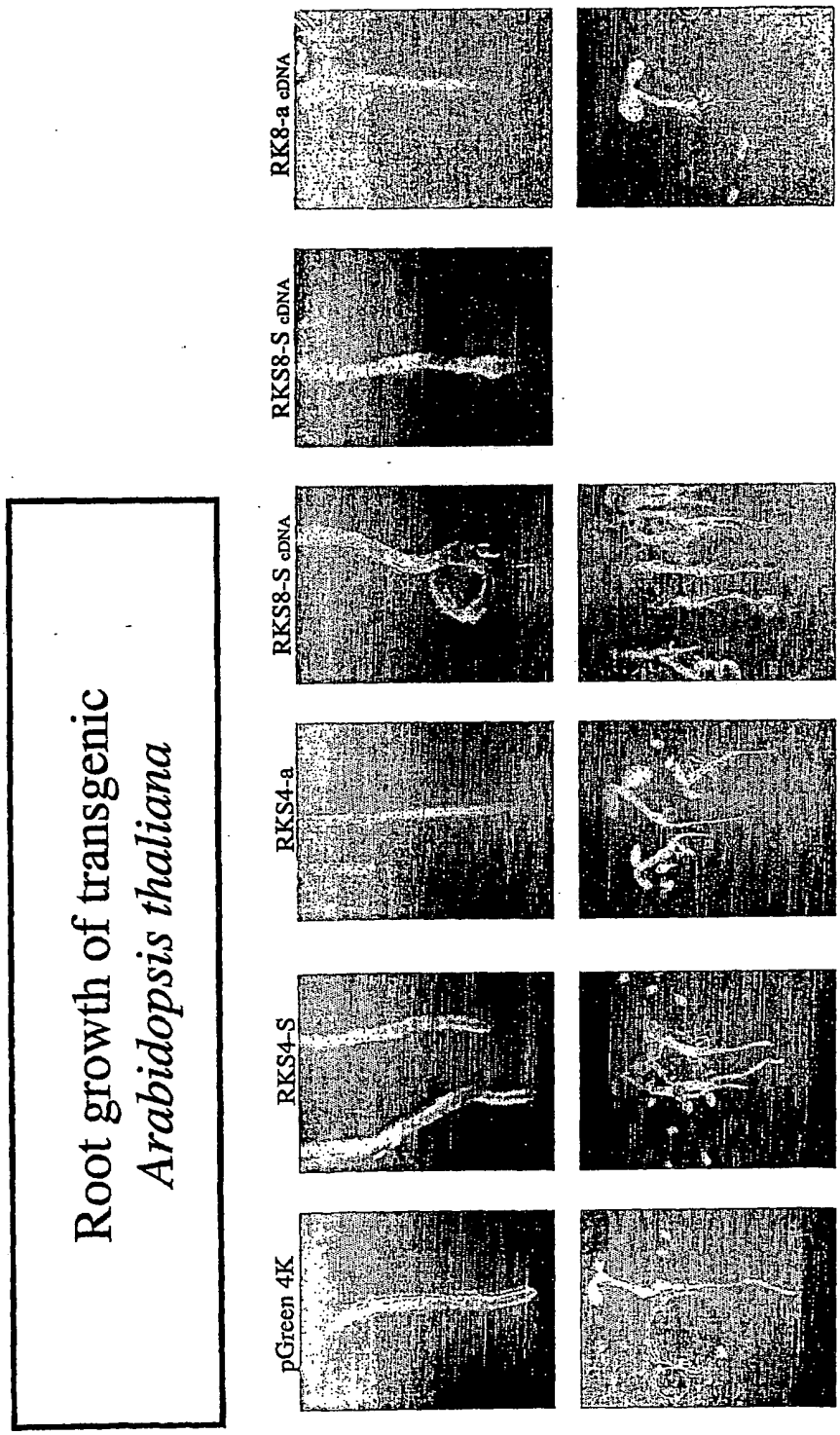

Root growth of transgenic
Arabidopsis thaliana
RK8-a cDNA
RKS8-S cDNA
RKS8-S cDNA
RKS4-a
RKS4-S
pGreen 4K

Fig. 23

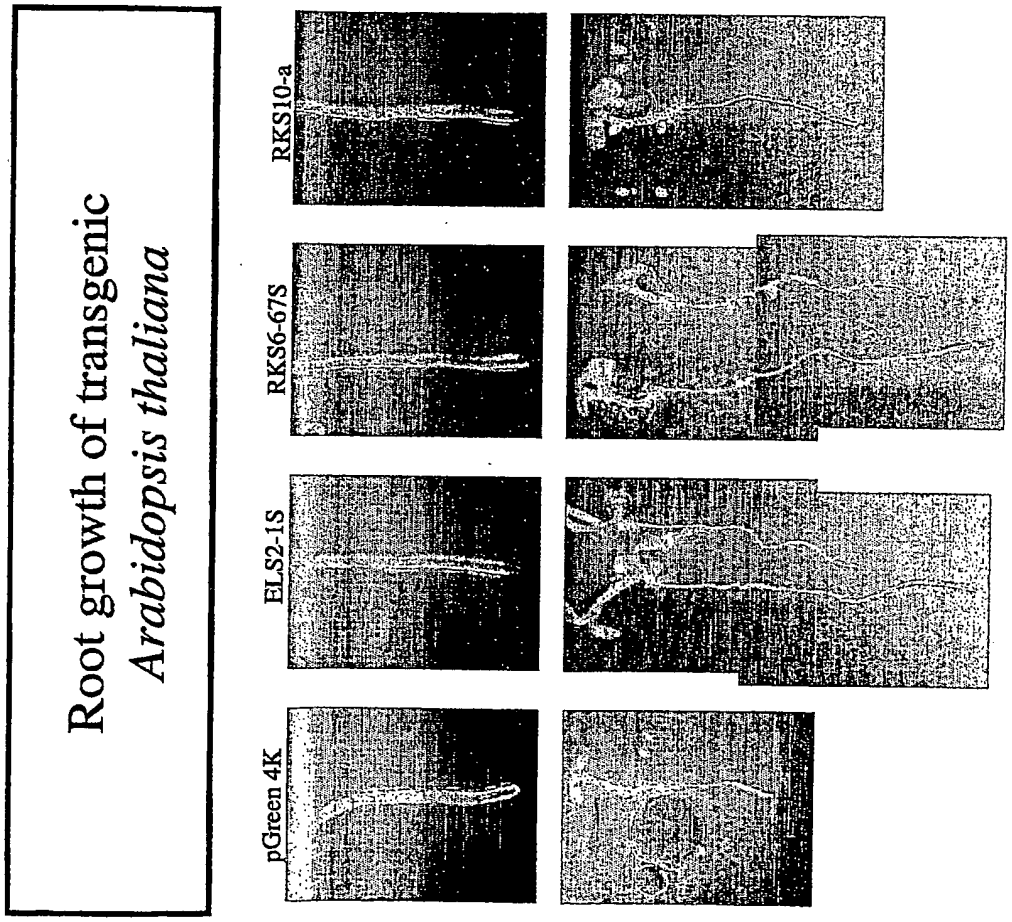

Root growth of transgenic
Arabidopsis thaliana
RKS10-a
RKS6-67S
ELS2-1S
pGreen 4K

Fig. 24

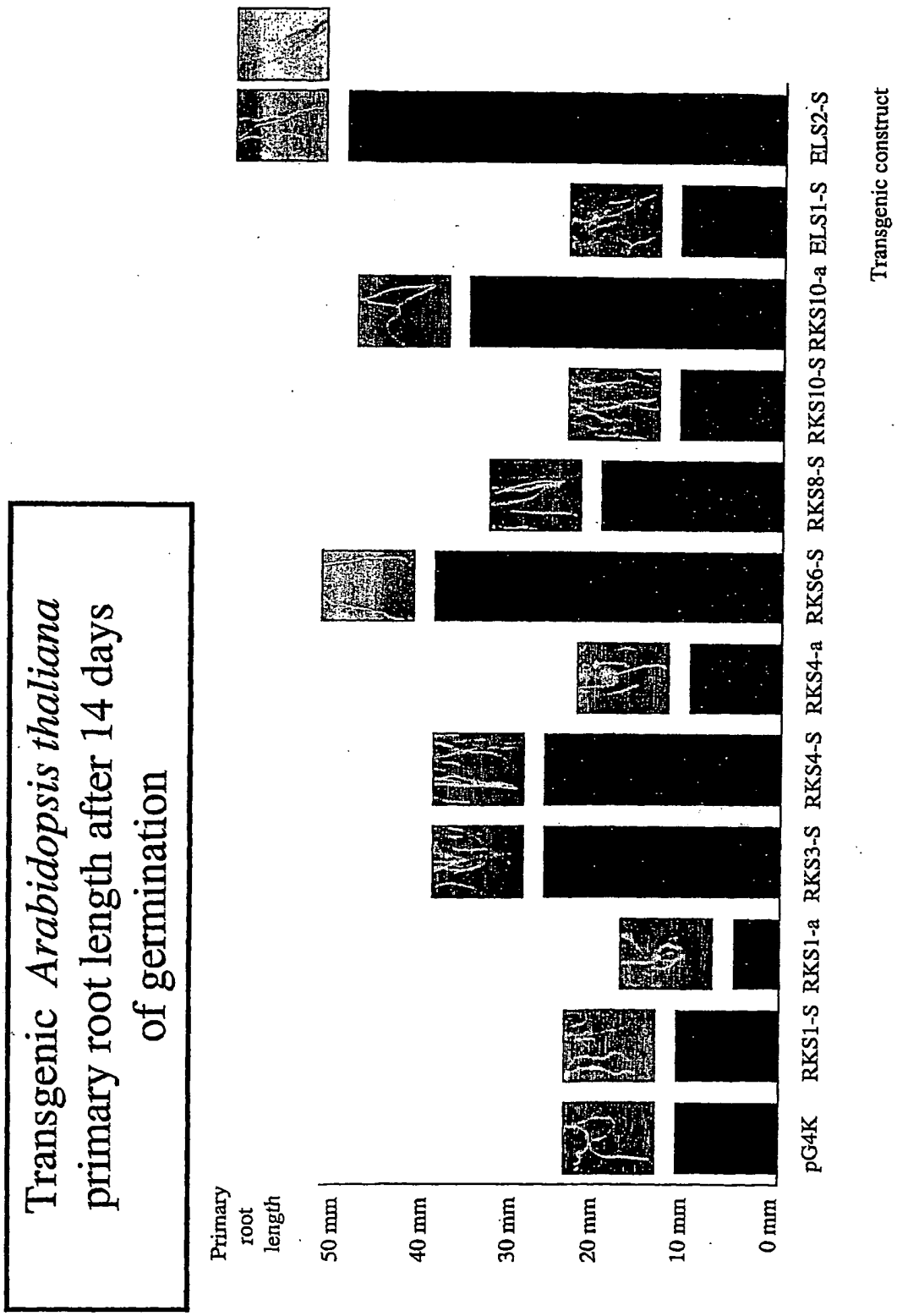
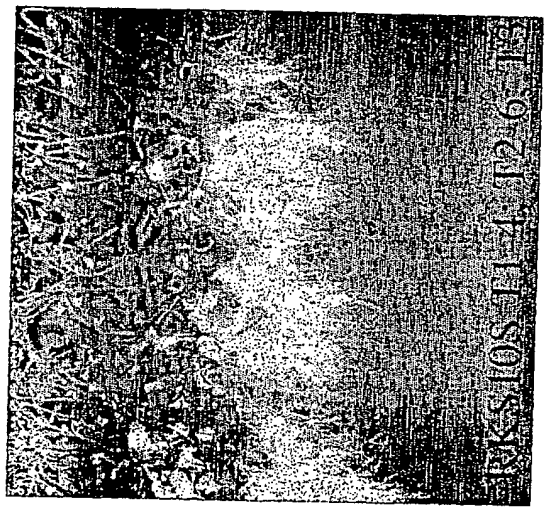

Transgenic *Arabidopsis thaliana* primary root length after 14 days of germination
Primary root length
50 mm
40 mm
30 mm
20 mm
10 mm
0 mm
pG4K
RKS1-S
RKS1-a
RKS3-S
RKS4-S
RKS4-a
RKS6-S
RKS8-S
RKS10-S
RKS10-a
ELS1-S
ELS2-S
Transgenic construct

Fig. 25

Effects of RKS10 transgenic constructs on plant development of 45 days old *Arabidopsis* WS



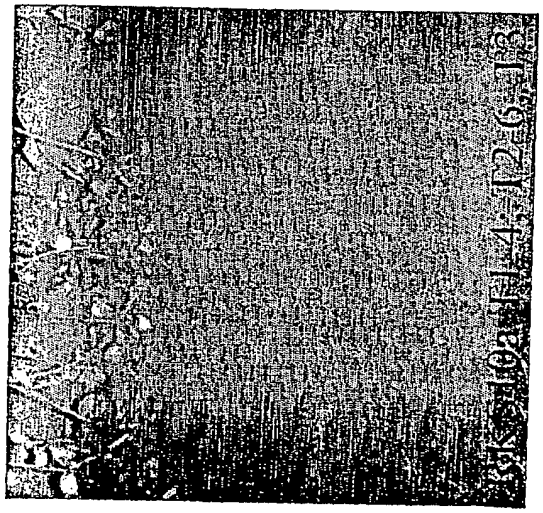


Fig. 26

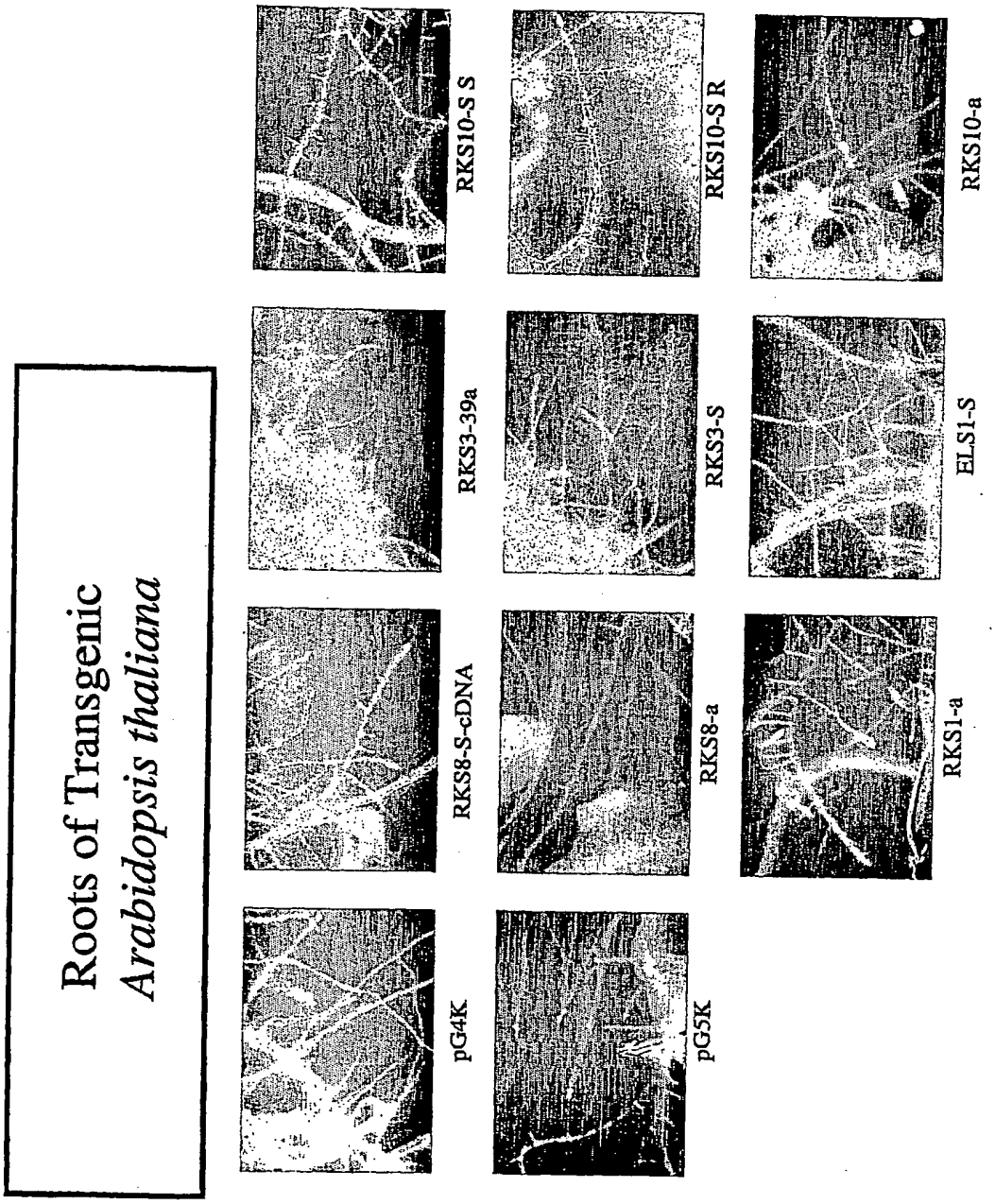

Roots of Transgenic
Arabidopsis thaliana
RKS10-S S
RKS10-S R
RKS10-a
RKS3-39a
RKS3-S
ELS1-S
RKS8-S-cDNA
RKS8-a
RKS1-a
pG4K
pG5K

Fig. 27

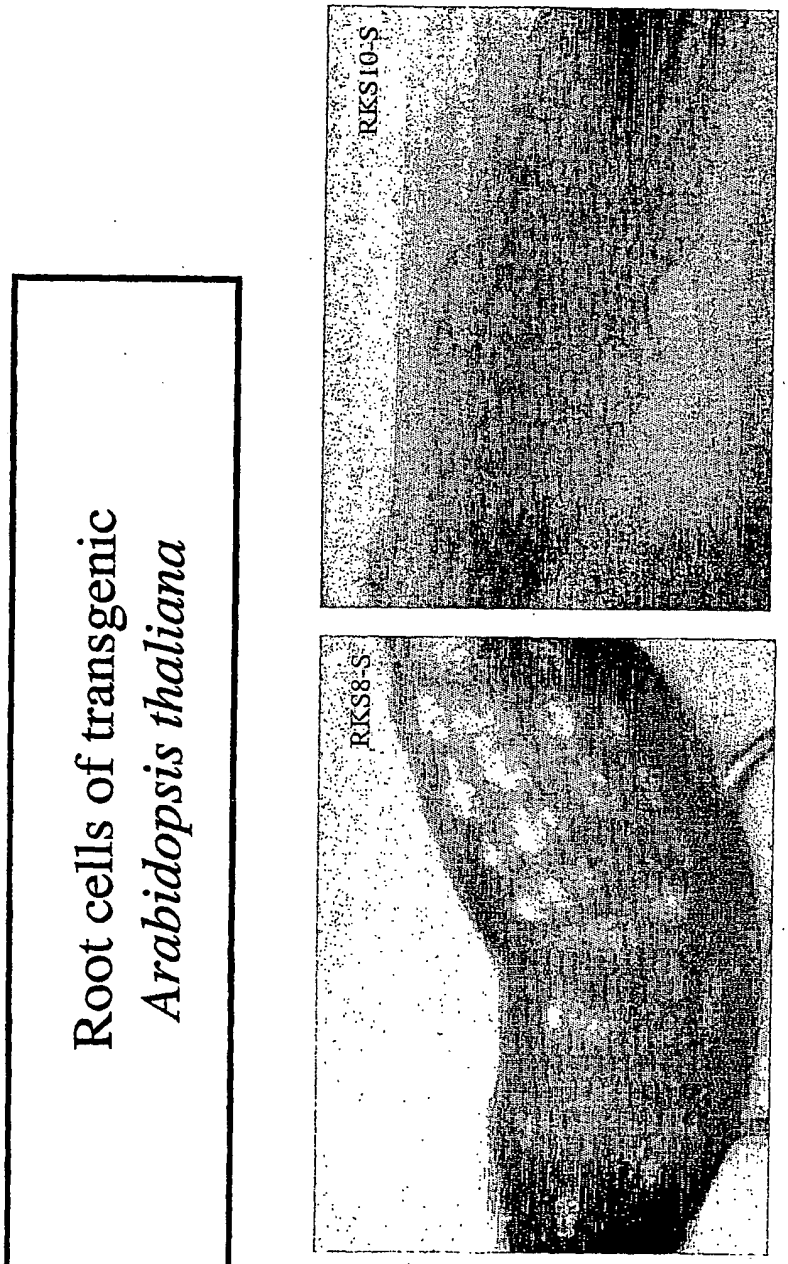

RKS10-S
RKS8-S
Root cells of transgenic
Arabidopsis thaliana

Fig. 28

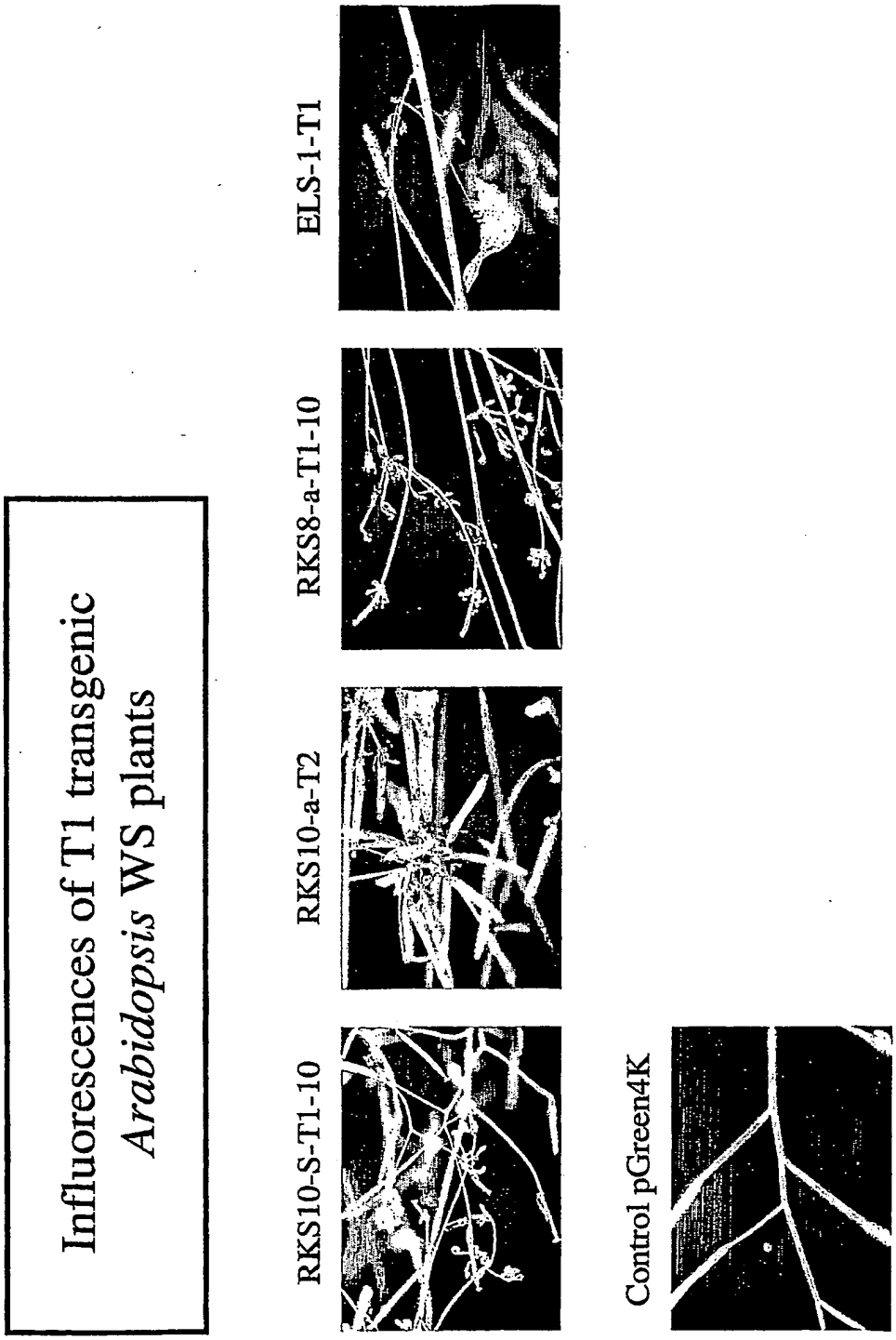

Influorescences of T1 transgenic *Arabidopsis* WS plants
ELS-1-T1
RKS8-a-T1-10
RKS10-a-T2
RKS10-S-T1-10
Control pGreen4K

Fig. 29

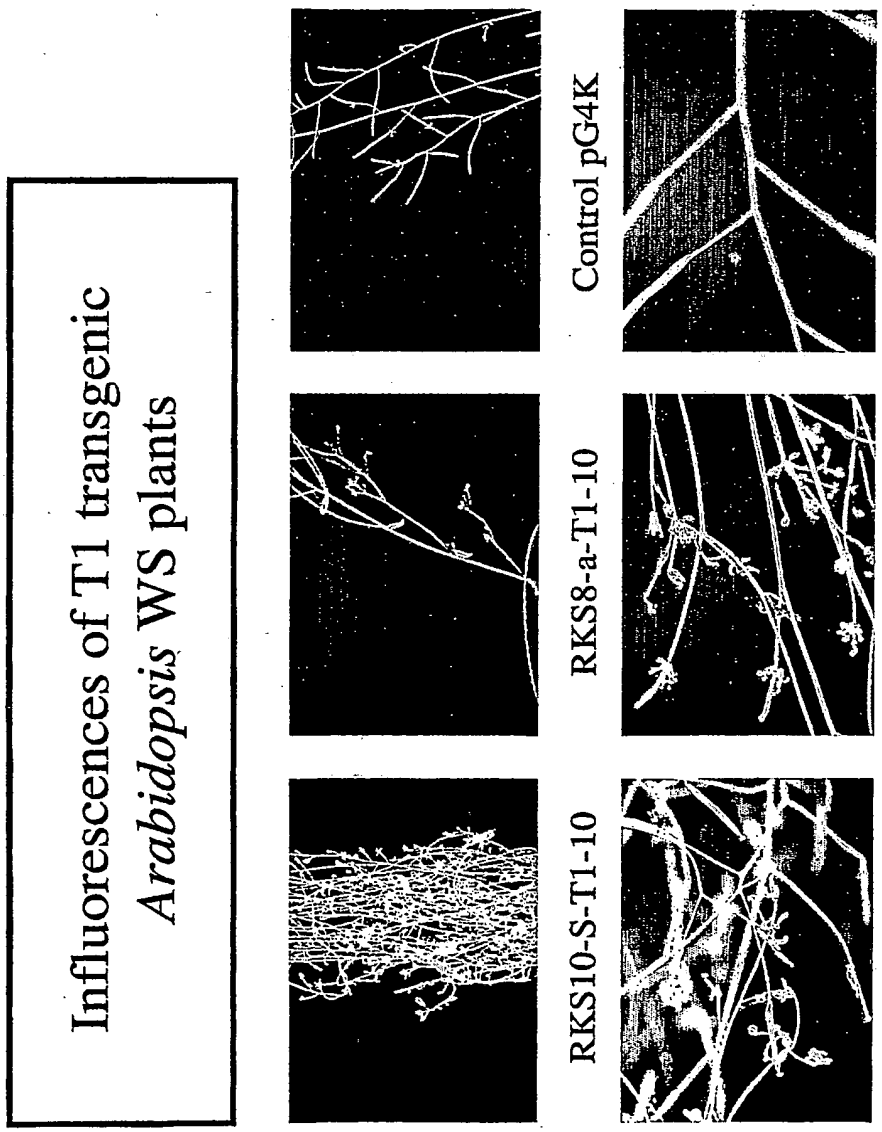

Influorescences of T1 transgenic
Arabidopsis WS plants
Control pG4K
RKS8-a-T1-10
RKS10-S-T1-10

Fig. 30

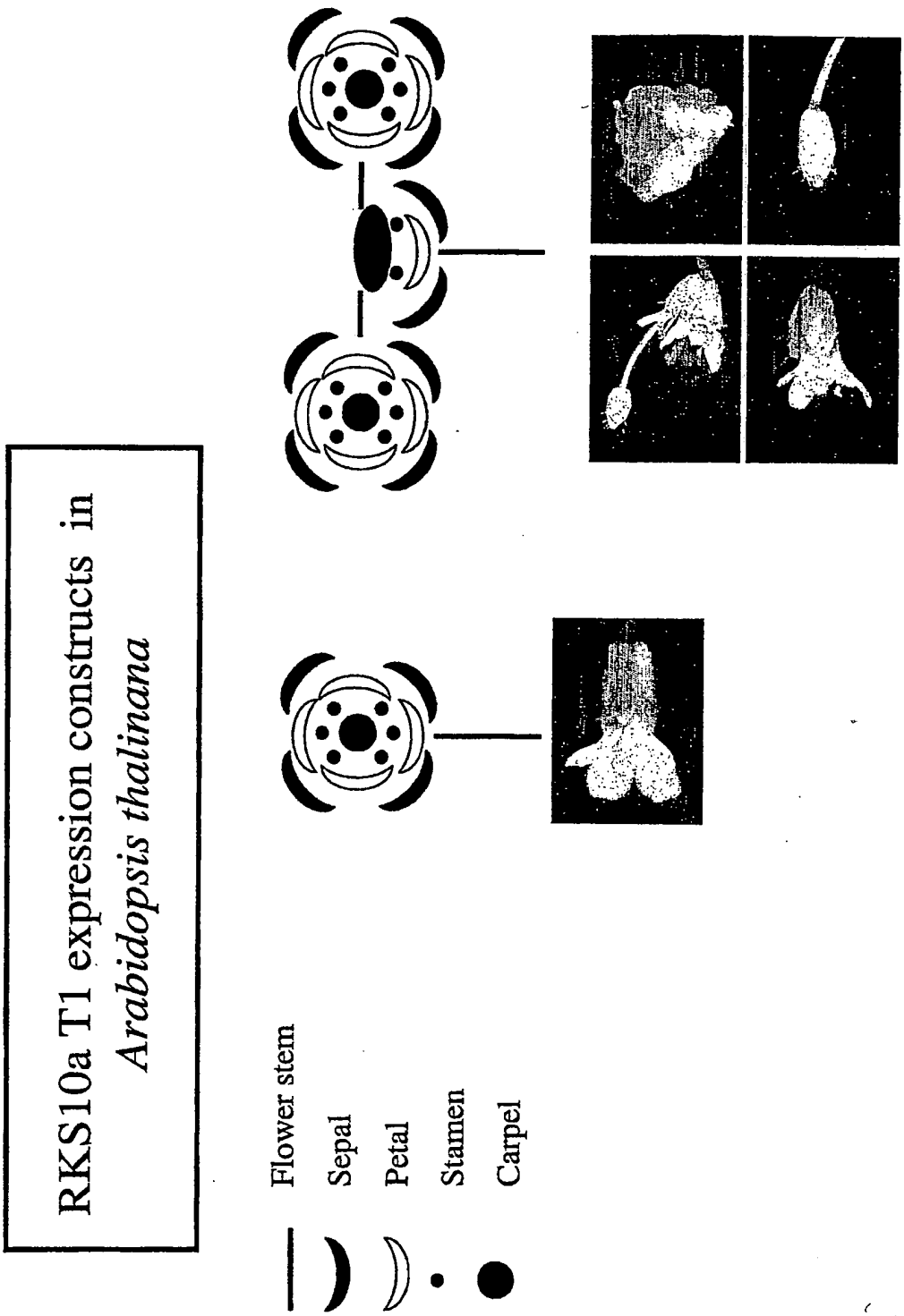

RKS10a T1 expression constructs in *Arabidopsis thaliana*
Flower stem
Sepal
Petal
Stamen
Carpel

Fig. 31

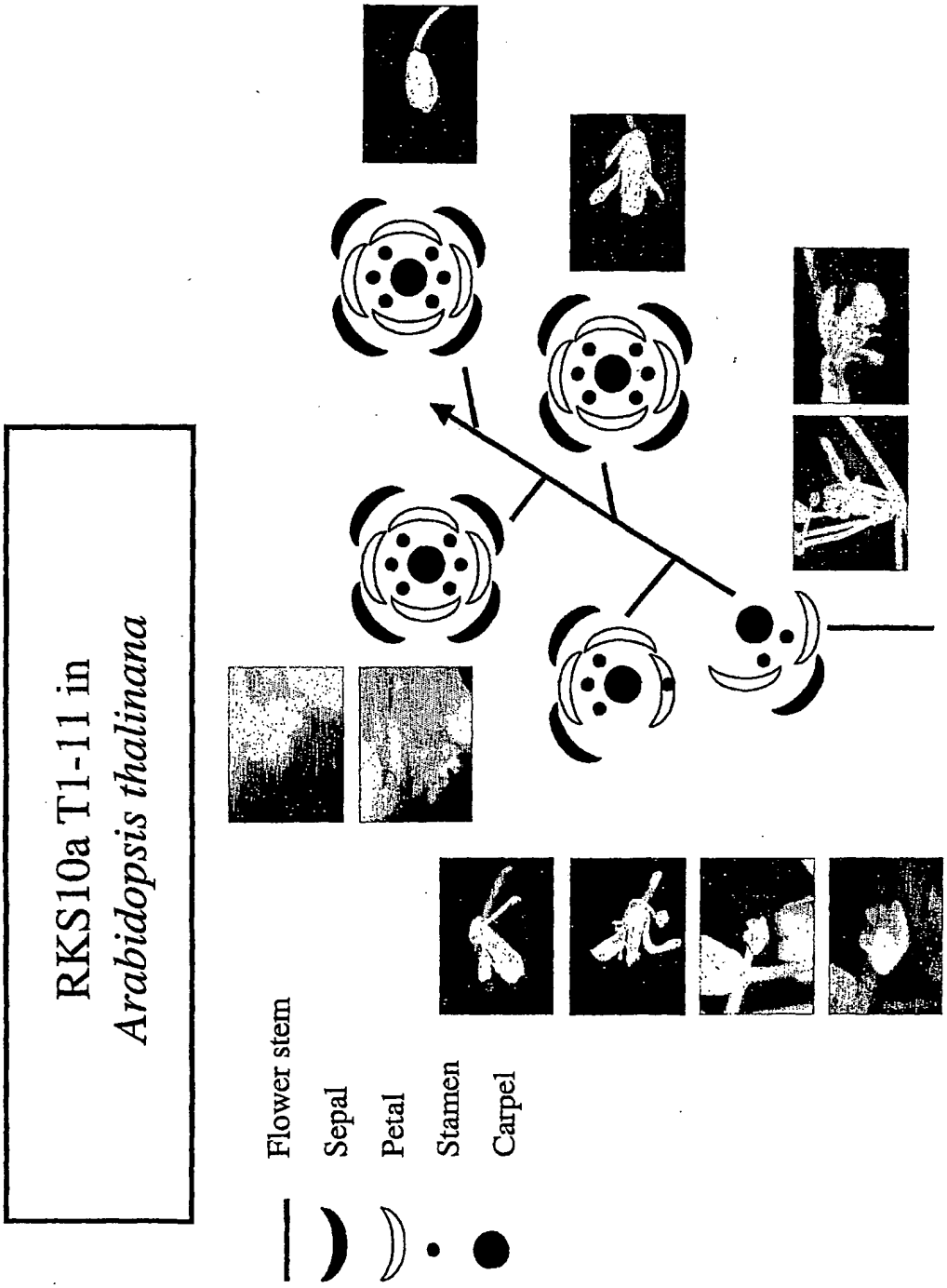
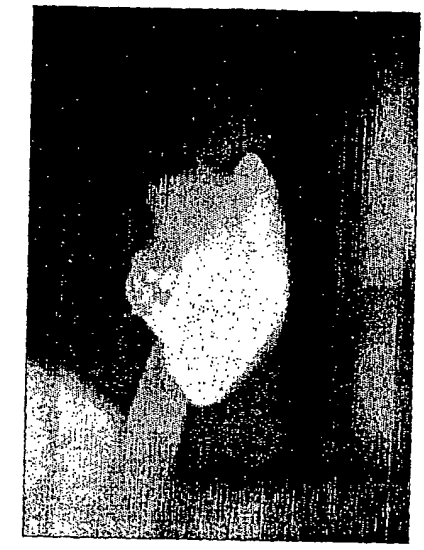
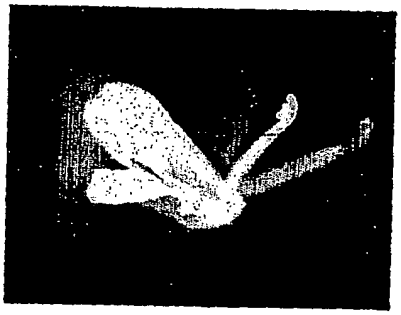

RKS10a T1-11 in
Arabidopsis thaliana
Flower stem
Sepal
Petal
Stamen
Carpel

Fig. 32

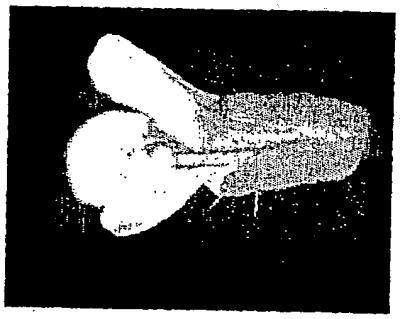
RKS10 antisense effects in *Arabidopsis thaliana*



detail flower RKS10a T1-11



RKS10a T1-11



pGreen 4K

Fig. 33

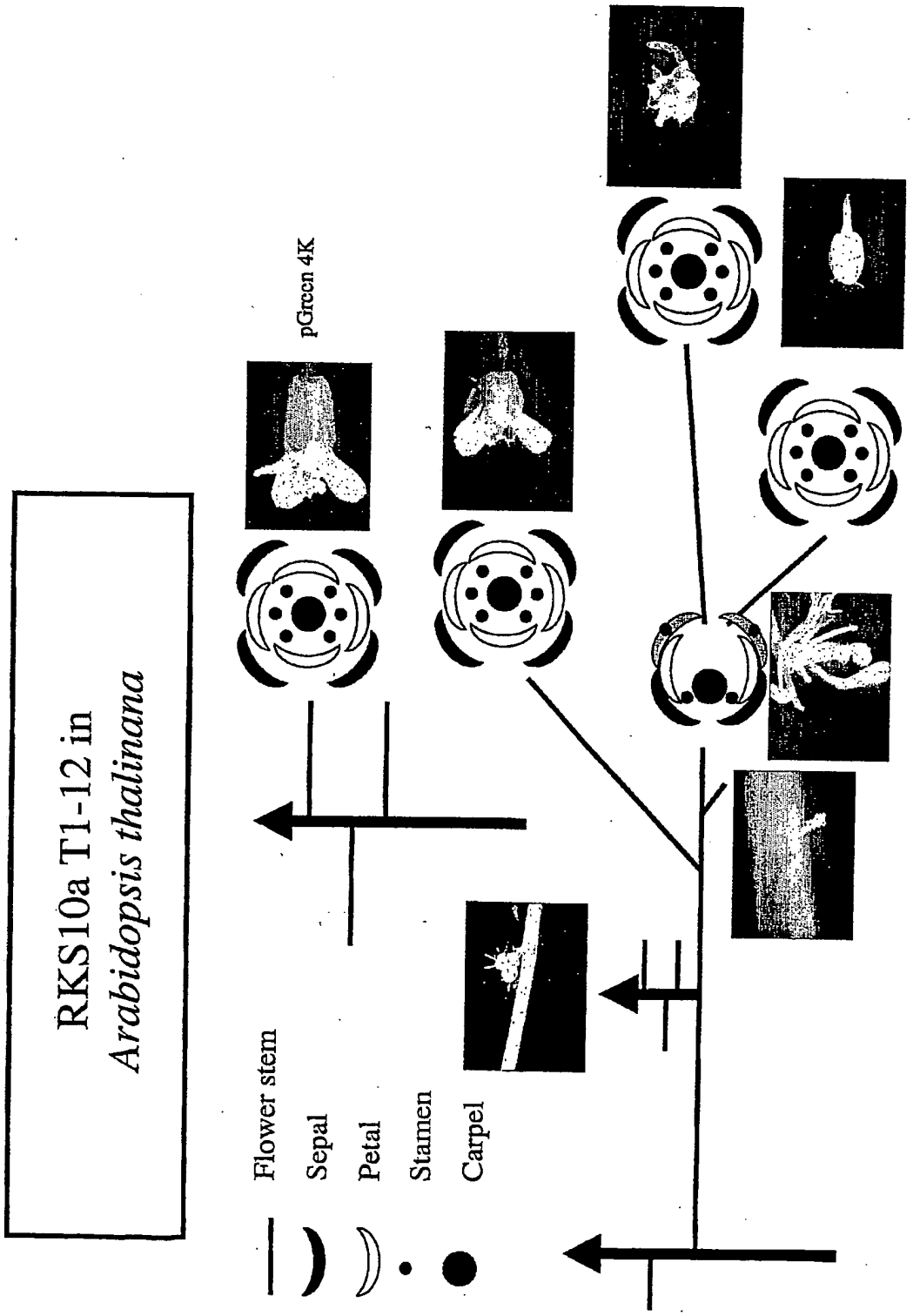

RKS10a T1-12 in
Arabidopsis thalinana
pGreen 4K
Flower stem
Sepal
Petal
Stamen
Carpel

Fig. 34

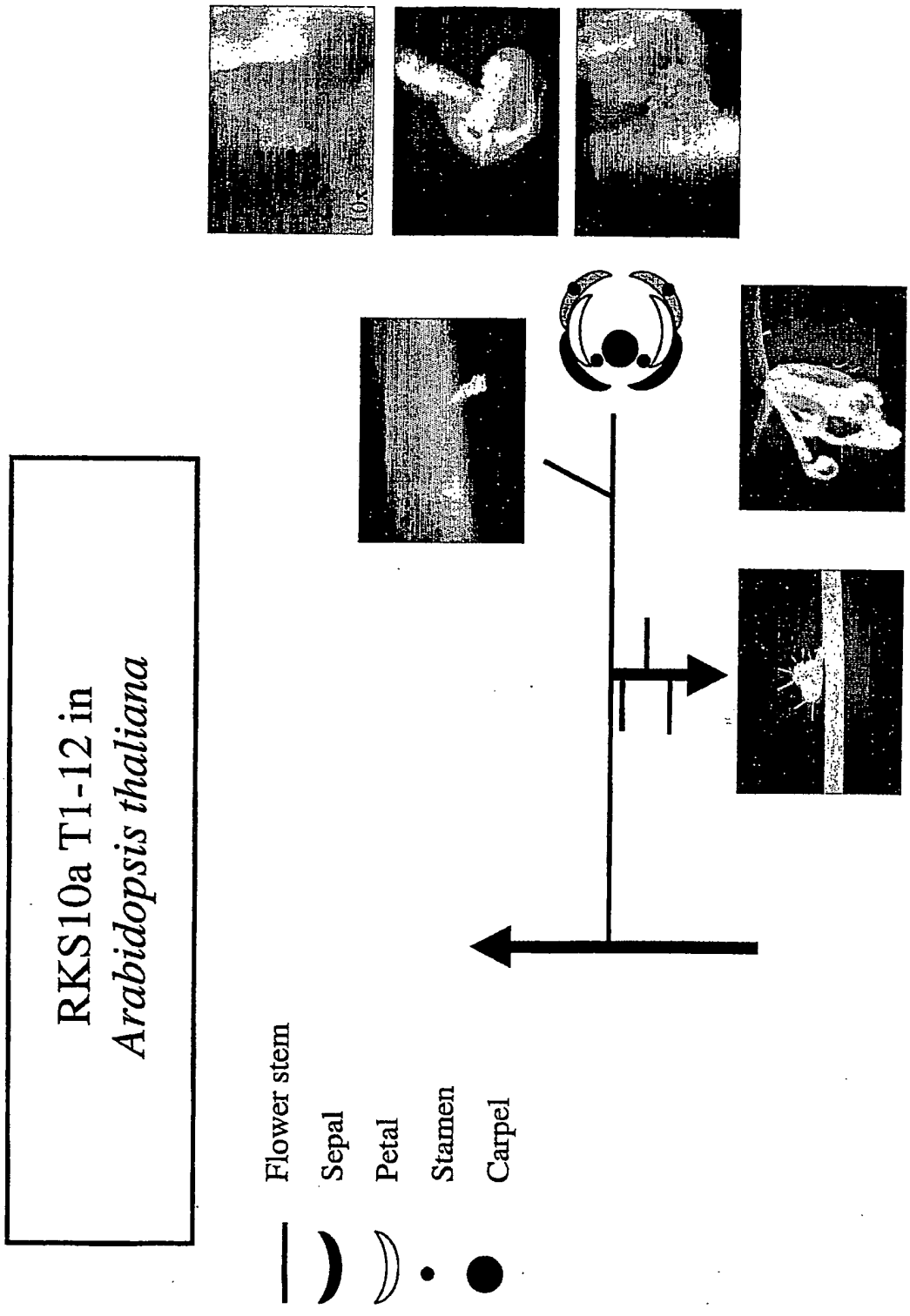

RKS10a T1-12 in
Arabidopsis thaliana
Flower stem
Sepal
Petal
Stamen
Carpel

Fig. 35

RKS13 regulates flower meristem identity in *Arabidopsis thaliana*

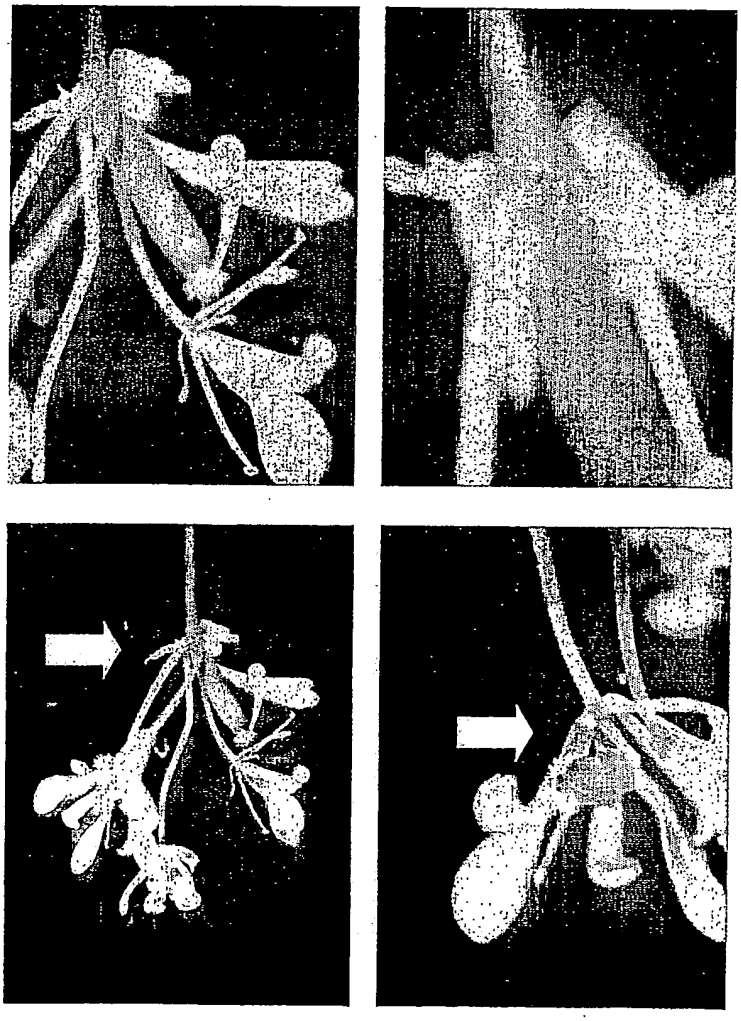
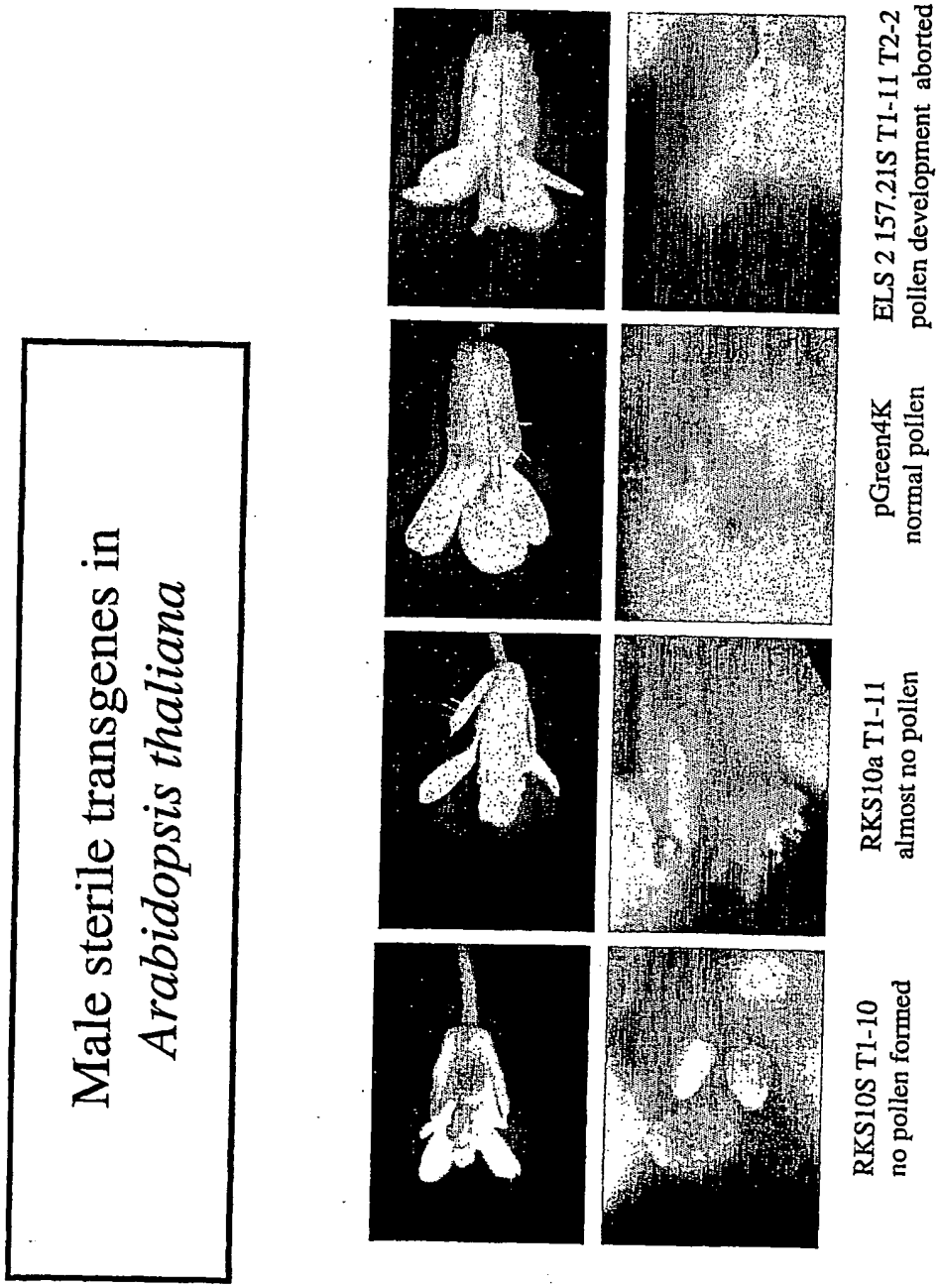


Fig. 36


Male sterile transgenes in
Arabidopsis thaliana
RKS10S T1-10
no pollen formed
RKS10a T1-11
almost no pollen
pGreen4K
normal pollen
ELS 2 157.21S T1-11 T2-2
pollen development aborted

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